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1944

TM 5-9324

WAR DEPARTMENT TECHNICAL MANUAL

U.S. Dept. of Army

SPRAYER, PAINT, PNEUMATIC,
PORTABLE, WITH COMPRESSOR,
GASOLINE ENGINE-DRIVEN,
WHEELBARROW-TYPE, WITH
TWO 5-GAL. GALVANIZED
STEEL TANKS AND ACCESSORIES,
BINKS, MODEL E-2. ENGINE:
KIEKHAEFER, MODEL KB6F.



MAINTENANCE INSTRUCTIONS AND PARTS CATALOG

WAR DEPARTMENT · 27 MARCH 1944

OPERATOR'S MANUAL
MAINTENANCE MANUAL
PARTS LIST

FOR

**SPRAYER, PAINT, PNEUMATIC, PORT-
ABLE, WITH COMPRESSOR, GASOLINE
ENGINE-DRIVEN, WHEELBARROW-TYPE,
WITH TWO 5-GAL. GALVANIZED STEEL
TANKS AND ACCESSORIES, BINKS,
MODEL E-2. ENGINE: KIEKHAEFER,
MODEL KB6F.**

WAR DEPARTMENT

Washington 25, D. C. (27 March 1944)

TM5-9324, Sprayer, Paint, Pneumatic, Portable, with Compressor, Gasoline Engine-Driven, Wheelbarrow-Type, with Two 5-Gal. Galvanized Steel Tanks and Accessories, Binks, Model E-2. Engine: Kiekhaefer, Model KB6F, is published for the information and guidance of all concerned.

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By order of the Secretary of War:

G. C. MARSHALL,
Chief of Staff.

Official:

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Major General,
The Adjutant General.

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X (For Explanation of Symbol see FM 21-6)

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FOREWORD

How to Use This Manual

Read all instructions carefully before attempting to spray with this equipment. This book contains complete and valuable information on painting, maintenance and repair.

Experience has proven that long and satisfactory service is usually the result of the operator's knowledge of correct operating methods and his diligence in applying this knowledge.

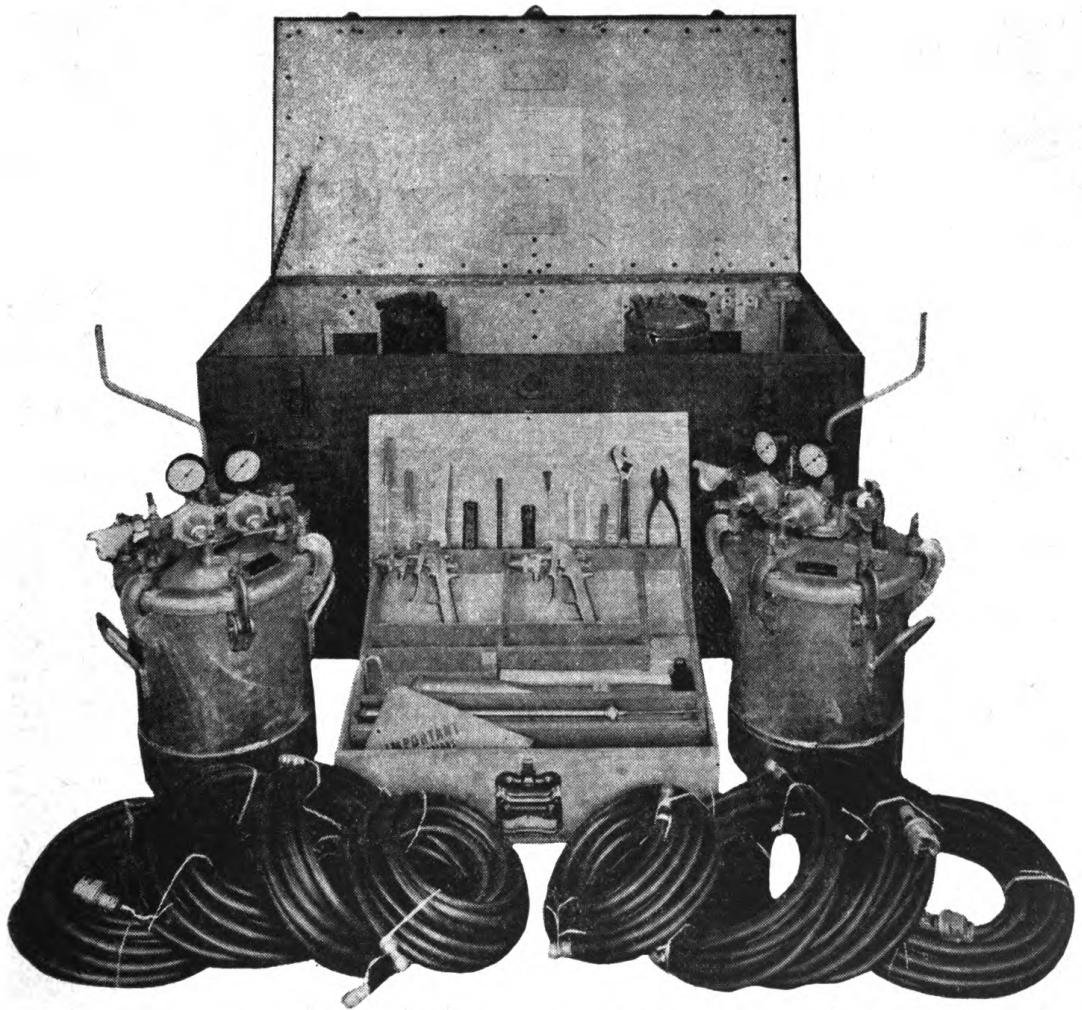
Give the equipment the same care and consideration that you would give any delicate precision built machine and it will give you long and faithful service.

BINKS MODEL E-2 PAINT SPRAY OUTFIT

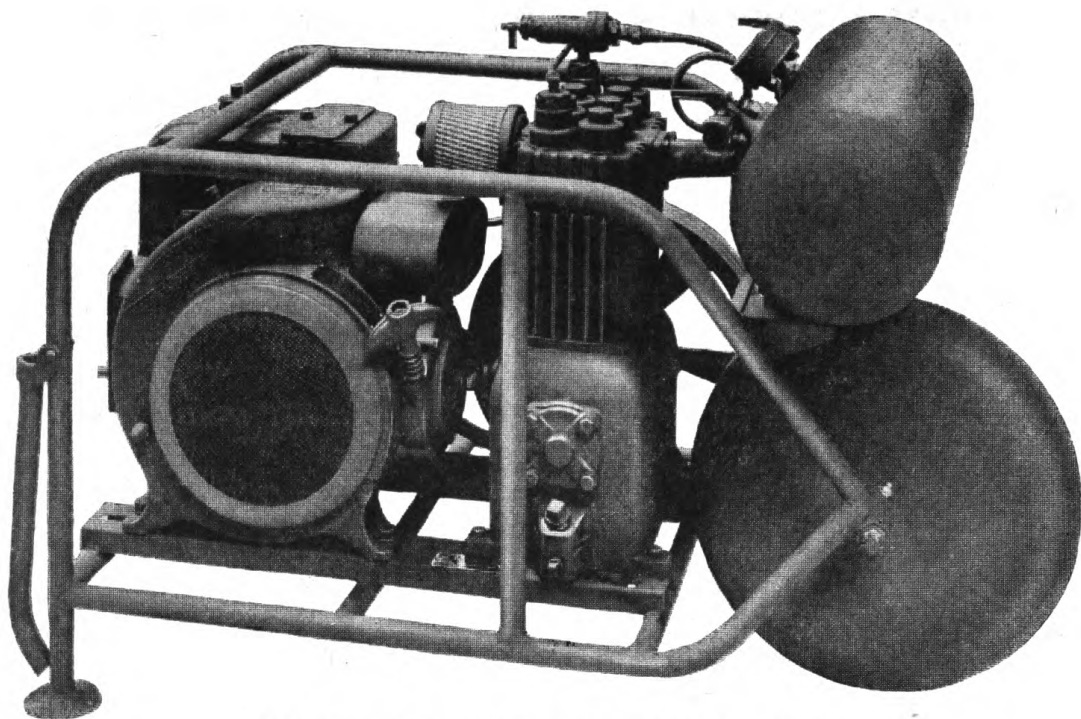
Purpose and Features

The Binks Model E-2 Paint Spray Outfit is a portable unit which contains all necessary equipment needed for two men to paint spray. By referring to Figures 1 and 2 it will be noted that the following items are furnished to make up the complete unit:

- I. A wheelbarrow mounted gasoline engine driven compressor for supplying the compressed air.
- II. A chest which contains all the following equipment for paint spraying.



**SPRAYING EQUIPMENT, BINKS MODEL E-2
FIGURE 1**



COMPRESSOR UNIT, BINKS MODEL E-2
FIGURE 2

1. Two spray guns for applying the paint.
2. Two pressure tanks for holding the paint, and equipped with regulators for controlling the flow of paint to the gun and the air pressure at the gun.
3. An extension which, when attached to the gun, allows the operator to paint places that cannot be reached with the gun alone.
4. A set of hoses to interconnect the above equipment and also to connect to the air compressor.
5. A set of tools necessary to make minor adjustments and repairs.
6. A set of accessories for holding the fuel, the oil, and the grease necessary for proper operation.
7. A set of repair parts to replace those most likely to wear or be damaged in use.

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SECTION I

OPERATOR'S MANUAL

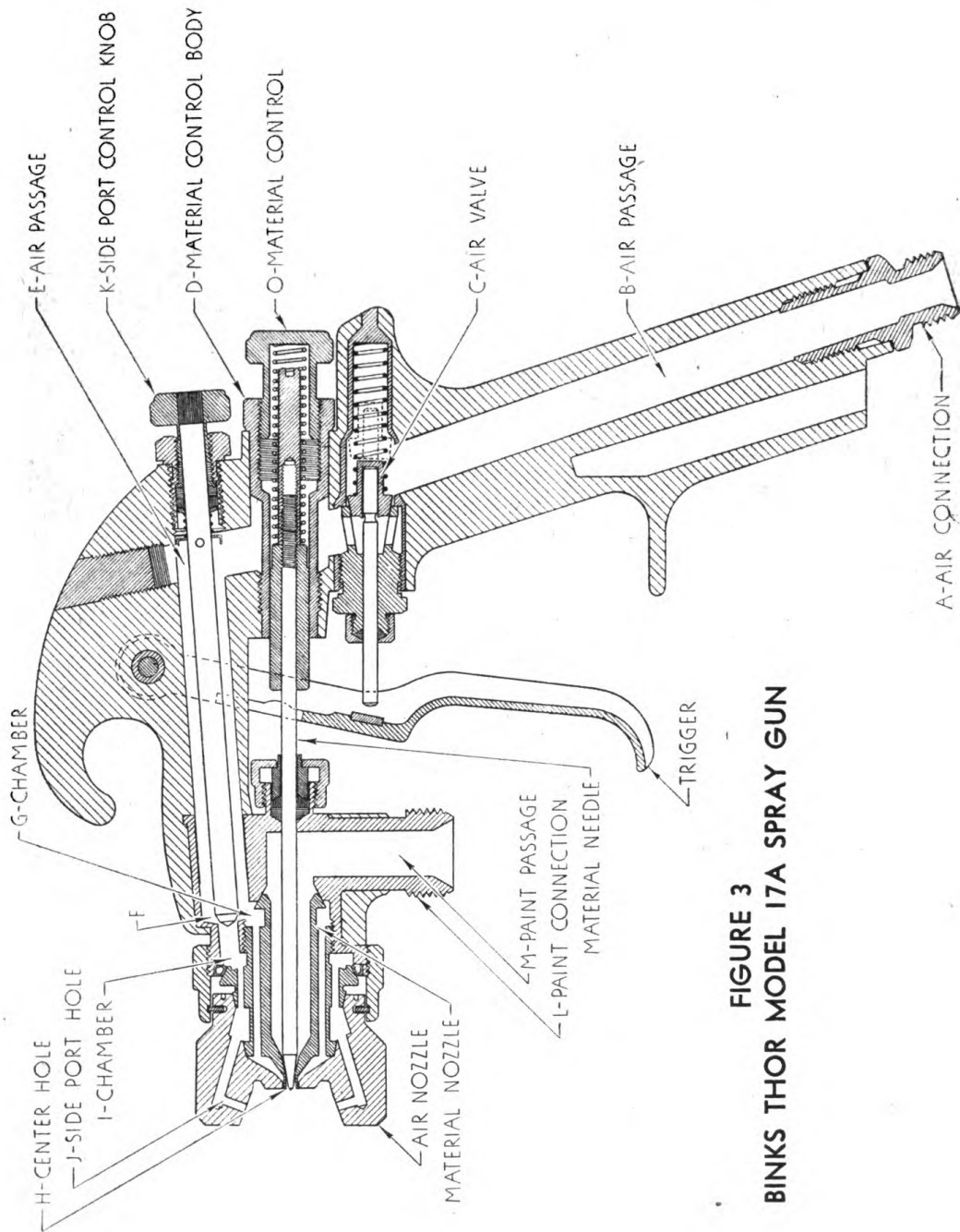


FIGURE 3
BINKS THOR MODEL 17A SPRAY GUN

DESCRIPTION

Spray Gun

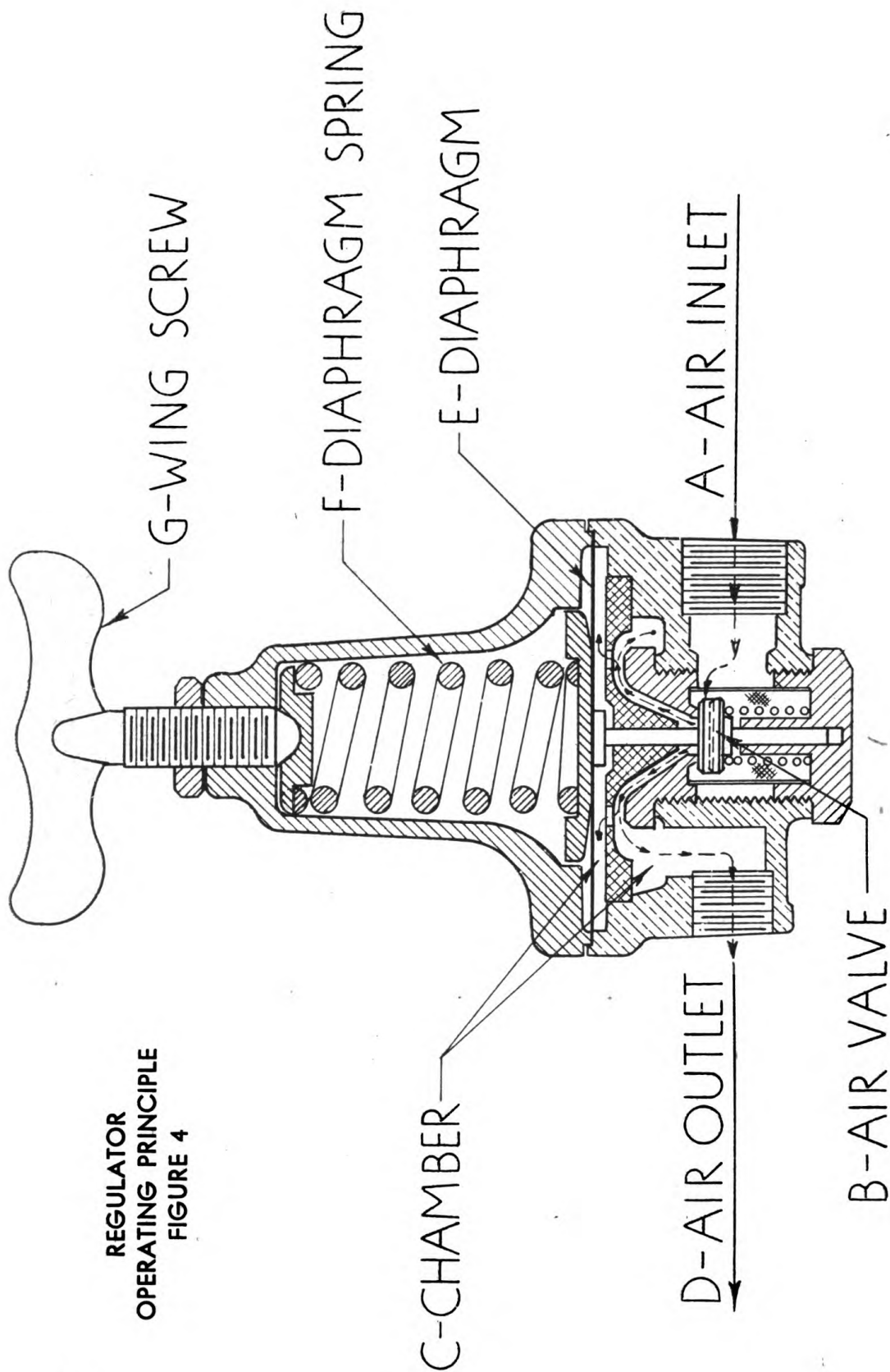
The Binks Thor Model No. 17A Gun is a device used to break up or atomize the paint and deposit it evenly and quickly on the surface of the object being covered. By referring to Figure 3 the operation of the gun can be best explained as follows:

The air hose connects at the bottom of the handle to the connector "A." The air entering through the hose travels up the air passage "B" to the air valve "C." When the trigger is pulled, the air valve "C" moves to the position indicated by the dotted outline, allowing the air to pass through the valve and up and around the material control body "D" and into the air passage "E." The air travels forward to point "F" where it divides, a part entering chamber "G" and from there through the material nozzle and out the center hole "H" of the air nozzle. The other portion of the air enters chamber "I" and travels forward and out the side portholes "J." The amount of air passing through the side port holes of the external mixed nozzle is controlled by the side port control knob K.

When this air is shut off the resulting spray is round. As the amount of air is increased by turning the control key "K" counterclockwise, the spray will change to a fan shape. The more the key is turned, the wider the fan.

The material or paint enters the gun at the connection "L," moves up passageway "M" through the center of the material nozzle and out the center hole. The trigger is arranged so that when it is pulled, the air valve opens first and then the material needle. The travel of the trigger which in turn controls the material opening is regulated by the material control assembly "O." The further it is screwed in, the smaller the material opening, and the smaller the amount of paint deposited on the object being sprayed.

REGULATOR
OPERATING PRINCIPLE
FIGURE 4



Pressure Tank and Regulator

The pressure tank is a container to hold the material, provide a means to keep it mixed, and feed it to the gun at a constant pressure. This is accomplished by allowing air to enter the sealed tank at the top, which exerts its pressure on the material, and forces it up the material tube through the strainer into the hose and to the gun. The pressure of the air in the tank is the material pressure and it is regulated by the regulating unit. The regulator can best be explained by referring to the sectional view of a regulator Figure 4.

Air enters the regulator at "A," passes valve "B" and into chamber "C" and then out passage "D." As the air pressure in chamber "C" increases due to the air not being used, or not used as fast as it is passing by the valve "B," the pressure in this chamber will build up and exert a force on the diaphragm "E." As this pressure is increased, the force will overcome the tension of spring "F," allowing the diaphragm to move up, which means that the seat "B" will follow it shutting off the flow of air. When air is again used, the pressure in chamber "C" will drop and the spring will press the diaphragm and the seat down, allowing air to flow again.

As these movements are small and rapid, the pressure of the air passing through the regulator is controlled very accurately. The magnitude of the regulated air can be adjusted by the wing screw "G." By screwing it down, the tension of the spring "E" is increased which in turn requires a greater pressure in chamber "C" before the valve "B" will close and shut off the flow of air.

Extension

The extension is a device which is readily attached to the spray gun, and is used to spray places which cannot be reached with the spray gun alone. The extension base is so constructed that when the standard air and material nozzles of the gun are removed and the extension attached, the material will flow through a center tube and the air around the center tube and inside the outer tube to the head. Here the flow of material is controlled by the material needle valve, operated from the gun as is the air (see explanation of gun). When the trigger is pulled, the air and material flow forward and are mixed in the nozzles on the extension head, and the air will atomize the material and eject it in the form of a fan spray.

COMPRESSOR UNIT

The compressor unit, which is a part of the Binks Model E-2 paint sprayer, is made up of an air compressor with an automatic unloader, a gasoline engine, a wheelbarrow frame, and an air receiver tank.

Wheelbarrow Frame

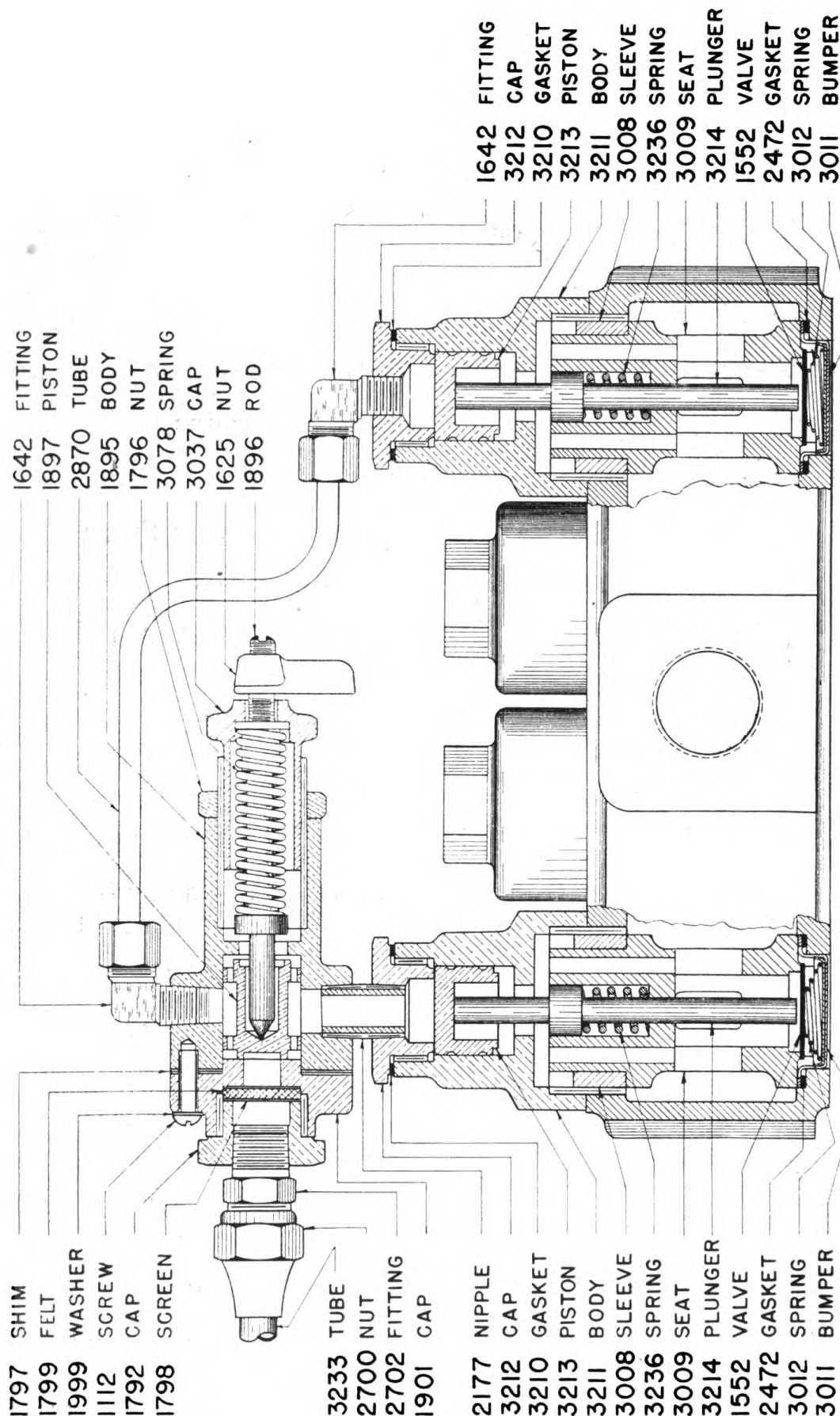
This is a light weight carriage which permits the compressor unit to be easily transported in the field. The carriage is of tubular steel construction equipped with a water tight wheel and folding carrying handles. The carriage has also welded to it a track with draw bar for mounting the compressor and engine and adjusting the belt tension.

Air Receiver Tank

This tank stores air at a pressure up to 90 pounds per square inch and removes the pulsations from the air before it goes to the spray gun.

General Specifications for Compressor

Make	Quincy
Model	216
Type	Single Stage
Number of Cylinders.....	Two
Cooling	Air Cooled
Bore	3"
Stroke	2½"
Valves	4 Discharge 4 Suction
Type Valve	Spring and Air Operated
Displacement	35 cu. in.
Unloader	Type VD
Pressure Load	70 P.S.I.
Pressure Unload	80 P.S.I.
Lubrication	Constant Level Splash
Crankcase Capacity	1¼ quarts
Drive	Double V-Belt



Type VD Suction Unloader Pilot

VD Pilot Unloader. The VD pilot unloader Figure 5 permits the compressor to maintain a pressure of from 70 to 80 pounds in air receiver. It automatically regulates the passing of receiver pressure to the suction (inlet) valves, so that the valves are held off their seats when air supply is greater than the demand.

When pressure in receiver reaches 80 pounds (approx.) tension of spring No. 3078 is overcome. Piston No. 1897 is then unseated from cap No. 1901 and instantly seated against body No. 1895 allowing air pressure from receiver to pass through tubing to inlet valves, which causes the unloader plunger to contact valves, holding them off their seats, so that the compressor will not pump.

When air consumption causes pressure in receiver to drop to 70 pounds (approx.) the spring will push the piston back to the cap and all air is allowed to escape from unloader plunger to atmosphere around rod No. 1896 of VD pilot, permitting the compressor inlet valve to again seat, which results in compressor again pumping air into receiver.

Unloading may be accomplished manually at any time by tightening the wing nut No. 1625 of VD pilot. This overcomes tension of spring the same as when receiver pressure becomes greater than spring tension. When the compressor is in operation, the wing nut should be far enough away from adjustment cap No. 3037 to permit free movement.

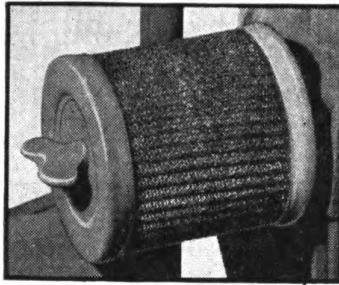
General Specifications Gasoline Engine

MakeKiekhaefer "Mercury"
ModelKB6F
Operating CycleTwo Stroke
Number of Cylinders.....Two
Firing OrderAlternate
Cylinder Bore2 $\frac{1}{8}$ Inches
Stroke2 $\frac{1}{8}$ Inches
Piston Displacement15 Cu. In.
Cooling.....Air Cooled by Centrifugal Fan
HorsepowerSix
Governor Setting.....3200 R.P.M.
GovernorCentrifugal
Carburetor.....Float Feed-Dual Adjustment
IgnitionMagneto
Power Transmission to Compressor.....Double V-Belt
Fuel..One-half U. S. Pint OE-30 (Oil, Engine SAE-30),
Thoroughly Mixed with one U.S. Gallon Gasoline.
Read "Engine Lubrication."
Fuel Tank Capacity.....3 U. S. Quarts
Recommended Spark Plugs.....Champion J-10
Commercial

SAFETY PRECAUTIONS

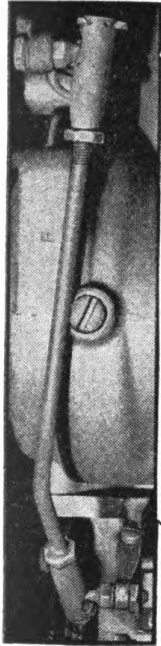
1. Never spray indoors without a mask or without plenty of ventilation.
2. Never, if using spraying equipment without compressor, connect to a compressed air line with over a 150-pound gauge pressure.
3. Never loosen clamps on pressure tank unless gauges read zero.
4. Never use corrugated air hose for material.
5. Never put fuel and oil in engine unless thoroughly mixed.
6. Never operate engine in a closed room: **GUARD AGAINST CARBON MONOXIDE POISONING** by always being sure of a supply of fresh air.
7. Never operate engine with fan screen SKC-1542 removed.
8. Never start engine unless oil level of compressor has been checked.
9. Never spray near the compressor unit, as the overspray will be drawn to the unit by the fans and deposited on the cooling fins, causing both the compressor and engine to overheat.

LUBRICATION GUIDE BINKS MODEL E-2 COMPRESSOR WITH GASOLINE ENGINE



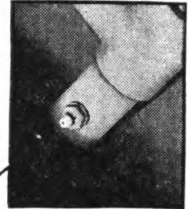
AIR FILTER

Every 64 hours wash with gasoline—do not oil.



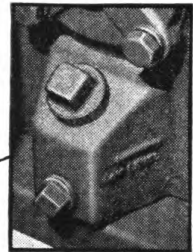
GOVERNOR LINKAGE

Every 8 hours a few drops of OE-10 on each socket. (Under engine)



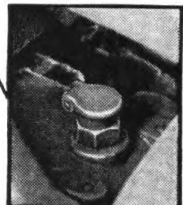
WHEEL BEARING

Every 256 hours lubricate with CG (grease, general purpose)



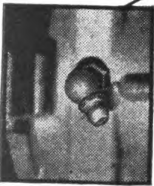
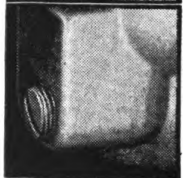
COMPRESSOR CRANKCASE

Check level every 8 hours, drain and refill every 256 hours, capacity 1¼ U.S. quarts OE-30 above 32° F. OE-10 between 0° F. and 32° F. OE-10 with 20% kerosene below 0° F.



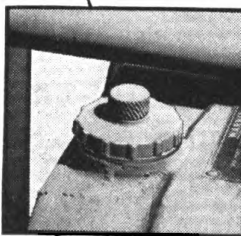
GOVERNOR

Every 8 hours remove plug, add OE-10 in cup until oil shows at lower edge of plug hole.



ACCESSORY GEAR

Every 8 hours with a suitable general purpose grease. (Under Engine)



GASOLINE TANK

Mix ½ pint OE-30 with 1 gallon gasoline.

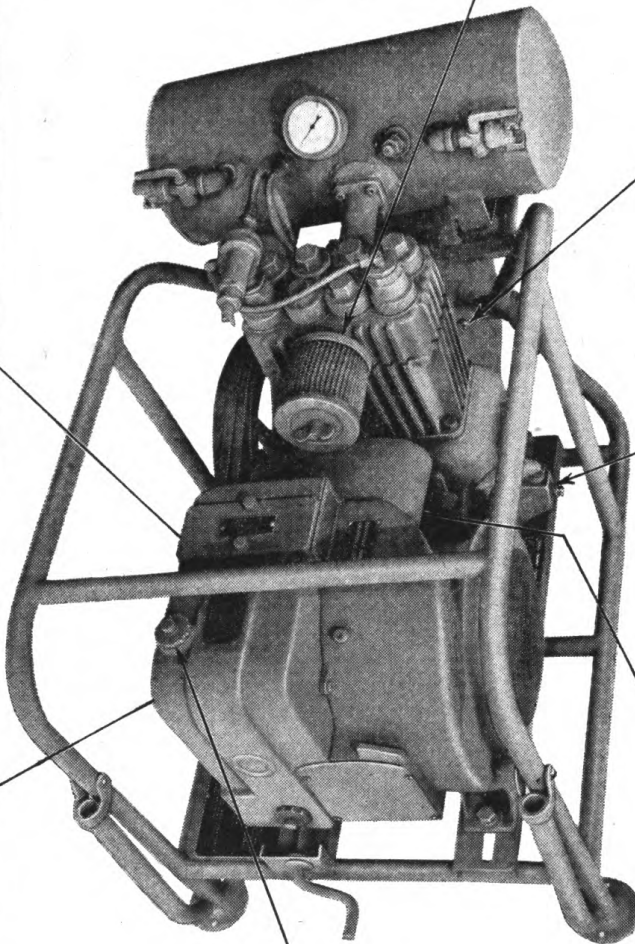


FIGURE 6

LUBRICATION

Engine

The engine is lubricated by thoroughly mixing $\frac{1}{2}$ pint of lubricating oil into each gallon of the gasoline to be used for fuel. Straight mineral oil in the SAE-30 or SAE-50 grade is preferred; otherwise use oil, engine (USA Spec. 2-104B) in the SAE-30 grade. Improved types of oil, engine (USA Spec. 2-104B) and engine modifications are being developed.

Caution: Never use the engine fuel tank for mixing fuel; always add the measured amount of oil to a separate container, pour in the gasoline, and shake until all oil is dissolved.

Gear

Lubricate accessory drive gear compartment with a grease gun through grease fitting (SKA-1645) located in bottom of crankcase. GO (lubricant, gear, Universal) should be applied to this fitting **every eight hours** of operation.

When operating in temperatures above $+32^{\circ}$ F., use GO-90 (lubricant, gear, Universal SAE-90). In temperatures below $+32^{\circ}$ F. use GO-80 (lubricant, gear, Universal SAE-80).

Governor

Governor is lubricated with OE-10 (oil, engine SAE-10) every 8 hours of operation as follows:

Remove oil level plug (SKA-4014) and, with engine in level position, add oil through oil cup (SKA-4009) until oil shows at lower edge of plug hole. Oil will then be at correct level. Be sure to replace oil level plug before operating engine.

Governor linkage bearings should be lubricated with a few drops of OE-10 (oil, engine SAE-10).

Magneto

Lubrication of the magneto in the field is unnecessary and inadvisable. See "Servicing Ignition System." Page 87.

Compressor

1. Remove plug See Fig. 7 and fill crankcase of compressor with oil up to level of the filler hole. Approximately $1\frac{1}{4}$ Qts. required. Use OE-30 (oil, engine SAE-30) for temperatures above 32° F., and use OE-10 (oil, engine SAE-10) 0° to 32° F. Below 0° F. use OE-10 (oil, engine SAE-10) with 20% kerosene.

2. Old oil should be drained and fresh oil added after 256 hours of operation. Under extremely dusty conditions the oil should be changed oftener. Drain plug is located immediately below filler plug. See Figure 7.

3. No other parts of the compressor itself need lubrication—and care should be taken that oil is **not** used on the V-belts.

4. Lubricate wheel bearings with CG at each 256 hour period. Remove shaft, clean bearing and shaft with solvent and lubricate with CG each 1024 hours. Use lubricating gun with push type fitting. See Figure 8.

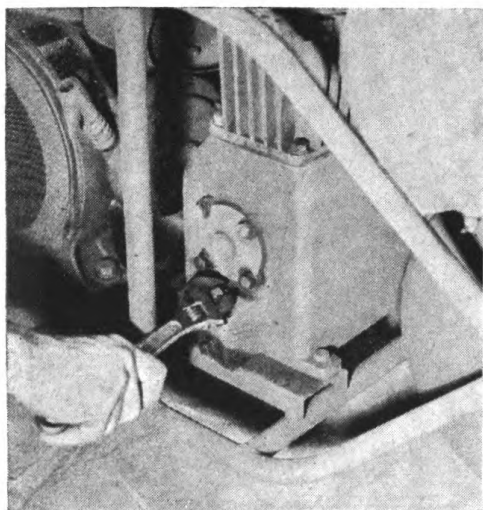


FIGURE 7

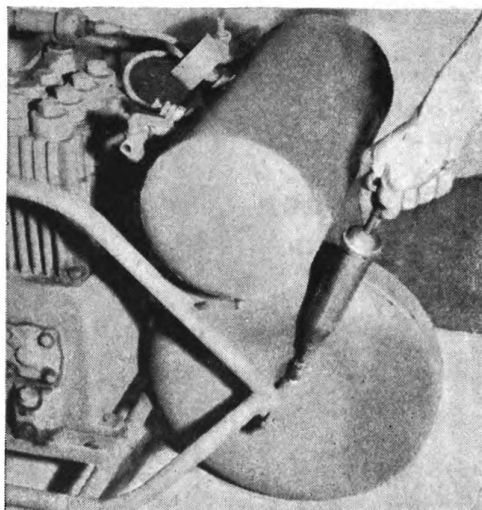


FIGURE 8

Spray Equipment

The only points requiring lubrication are the packings. These will, at times, depending on the use and climate conditions, require a few drops of OE-10 (Oil, Engine, SAE-10). The need for oil can be determined by

the leaking of air or material by these packings. The location of the packings and the method used in oiling are described in the maintenance section.

OPERATION

To operate the Binks Model E-2 Paint Spray Outfit the following procedure should be used:

Before Starting Engine

1. Check oil level in compressor and be sure it is at the proper level.
2. Open air outlet valves on receiver tank.
3. Check fuel tank to be sure it is filled with correct fuel mixture.
4. Open fuel tank cap vent screw (A-919) by turning it counter-clockwise.

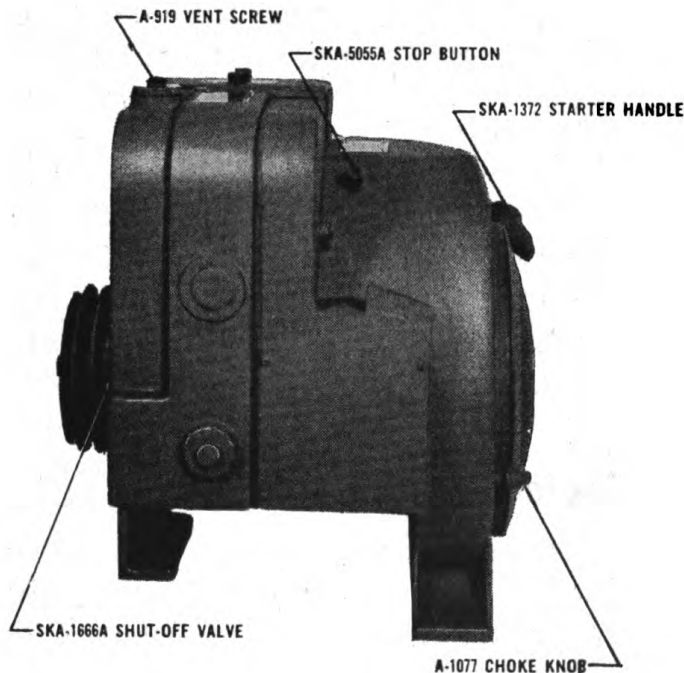


FIGURE 9

5. Open fuel tank shut-off valve (SKA-1666A), located on lower part of fuel tank (drive pulley side).

Starting Engine

1. Set choke valve in fully-closed position by pulling choke knob (A-1077) all the way out.
2. Pull starter handle (SKB-1372) upward with a quick, vigorous stroke. Continue to operate starter until engine fires. Engine is then primed for starting.
3. Set choke valve in fully-opened position by pushing choke knob (A-1077) all the way in.
4. Operate starter the same as in priming engine. As soon as engine starts, adjust choke as necessary to keep engine running until it has warmed up. Under no condition will engine continue to run with choke knob pulled all the way out.
5. As engine warms up and begins to misfire due to an over-rich mixture, gradually push choke knob inward toward open position. After engine has reached normal operating temperature, choke should be pushed all the way in to fully-opened position.
6. If engine has been warmed up or is hot from previous operation, it is not necessary to use choke in starting.
7. Should engine become flooded and fail to start, choke should be set in fully-opened position (choke knob pushed all the way in) and engine cranked vigorously. This will exhaust the excess fuel.

To Stop Engine

1. Press stop button (SKA-5055A), located on top of fan housing, and hold it down until engine stops. This switch short-circuits the magneto.
2. Close fuel shut-off valve.
3. Close fuel tank cap vent screw.

4. If engine is to remain idle for some time, or is to be transported, engine should be restarted after fuel has been shut off and allowed to run until it stops of its own accord, indicating that no fuel remains in carburetor.

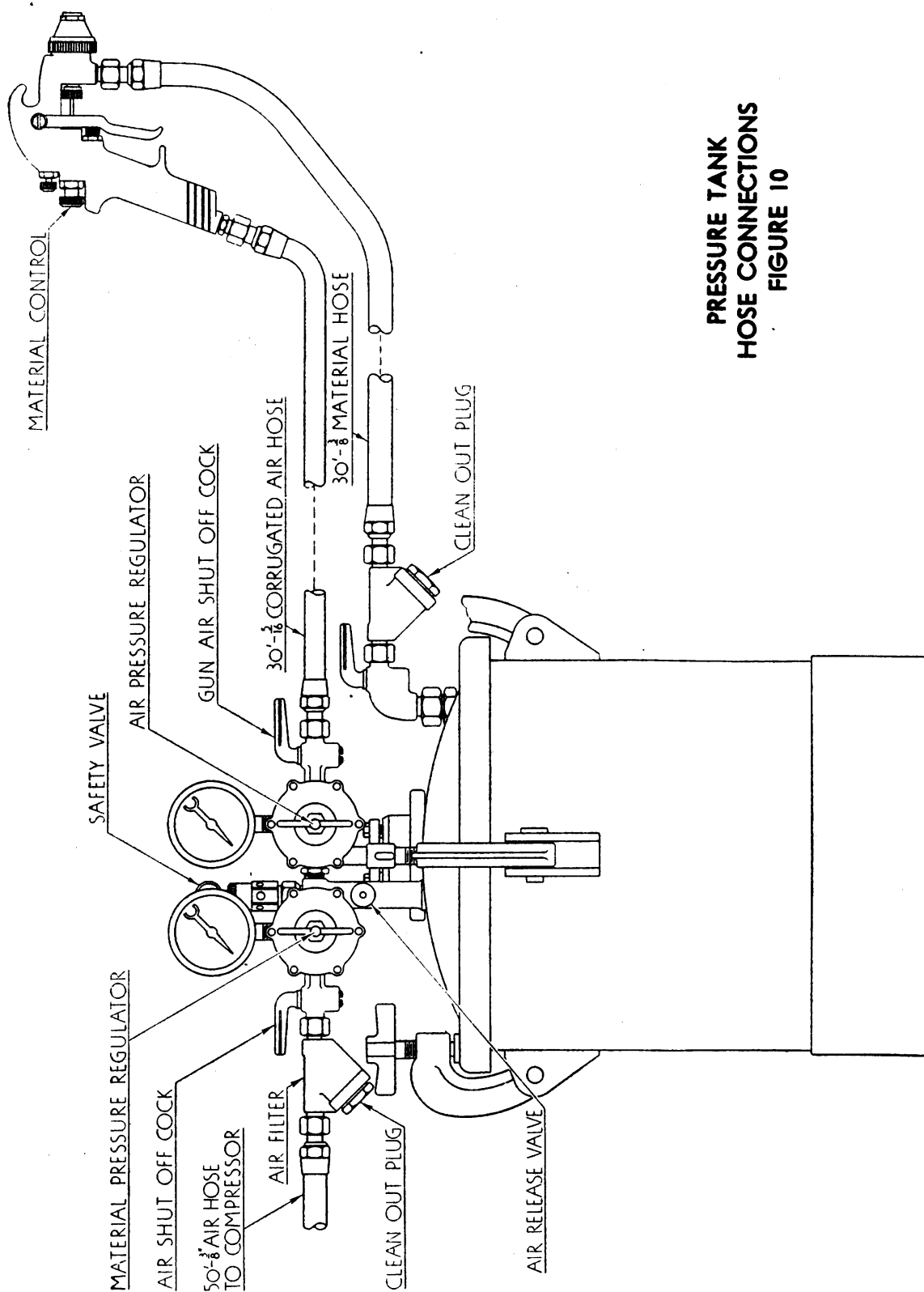
To Connect Spraying Equipment

To connect the outfit for use with the pressure tank, the arrangement of the hose should be as illustrated in Figure 10. Connect the 50 foot length of $\frac{3}{8}$ air hose to the air control inlet on the tank, and the other end with the quick detachable coupling to the compressor. This connection should not be made until the engine has been started and warmed up. The 30 foot length of $\frac{3}{8}$ material hose (smooth cover) should be connected from the paint outlet on the tank to the paint inlet on the gun.

The 30 foot length of $\frac{5}{16}$ air hose (corrugated cover) should connect from the air control outlet on the tank to air inlet on the gun. NEVER USE THE CORRUGATED HOSE FOR PAINT as the solvent in the paint will cause the rubber lining to swell and stop any flow through it. The material hose which is made for use with paints has a Thiokol synthetic rubber lining to resist the action of solvents.

The pressure tank has a capacity of five gallons and is equipped with two regulators for setting and controlling the pressures. It is only necessary to screw the regulator wing screw in to increase the pressure and out to decrease. In decreasing the material pressure, it will be necessary to open the air release valve and allow the air in the tank to escape before the pressure will drop.

The agitator paddles and handles are only meant to keep the material in the tank in a mixed condition. Therefore, any paint or other materials to be sprayed should be thoroughly mixed before placing in tank.



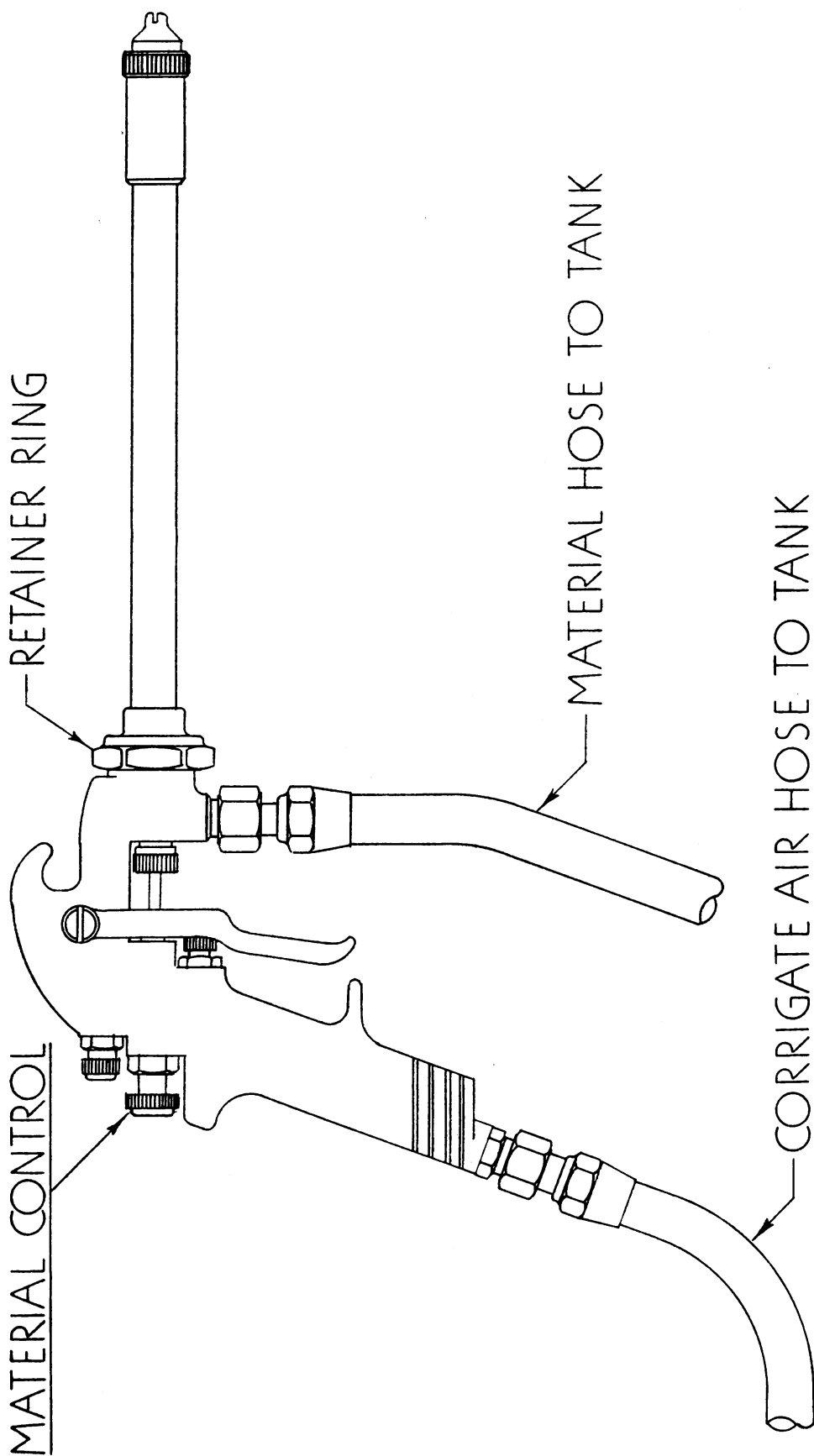
PRESSURE TANK
 HOSE CONNECTIONS
 FIGURE 10

Cleaning Tank and Gun

After each use, the equipment should be cleaned in the following manner:

1. Turn the material pressure regulator counter clockwise until all tension is released.
2. Open the air release valve allowing all trapped air to escape.
3. "Blow Back" gun by placing a rag over air nozzle of the gun and pulling trigger. This will cause the air from gun to force all paint in hose back into the tank.
4. Remove tank cover, put material back in original container, and clean tank with a solvent soaked rag.
5. Place a small amount of solvent in tank and replace cover.
6. Turn in material regulator wing screw forcing the clean solvent through the hose to the gun.
7. Spray the clean solvent for a moment; then repeat Operations 1 to 4.
8. Remove air nozzle, and clean it and the material nozzle with the solvent.

The tank is equipped with an air filter and a material strainer. These are identical in construction—the only difference being the felt which is placed in the air filter. It will be necessary to clean these items at regular intervals, which will be determined by the material being used and the humidity and dust condition of locality. To clean the strainer, it is only necessary to remove the clean-out plug and wash the screen in a solvent. The same is true of the filter, except that the felt, if it is very dirty or badly deteriorated, should be replaced with a new one—(a supply is included in the spare parts).



EXTENSION MOUNTING
FIGURE 11

Extension

To install the extension (Figure 11) it is necessary to disassemble the gun by removing the air nozzle, material nozzle, the material control screw and the material needle. (See procedure outlined in maintenance section.) After these parts are removed, the extension can be mounted on the front of the gun and the retainer ring tightened. The needle valve is then inserted from the back of the gun and the material control screw replaced. At times it may be necessary to adjust the needle valve because of wear. To adjust the needle it should be removed from the gun and the lock nuts loosened and set to a position so that when the needle is replaced in the gun and the trigger pulled, the trigger will contact the air valve stem first and move it about $1/32$ to $1/16$ inch before contacting the needle valve.

To clean the extension, the same procedure should be followed as in cleaning the gun by blowing back and then flushing with solvent.

INSPECTION

Daily Inspection

Gasoline Engine

1. Clean engine and compressor.
2. Remove and clean fan screen (SKC-1542). A dirty, clogged screen will interfere with cooling.
3. Clean carburetor air intake screen (SKA-1976A).
4. Inspect entire unit for loose screws, nuts, bolts, etc.
5. Remove spark plug cover (SKB-1757) and check spark plug terminal nuts for looseness.
6. Oil governor linkage with light oil.

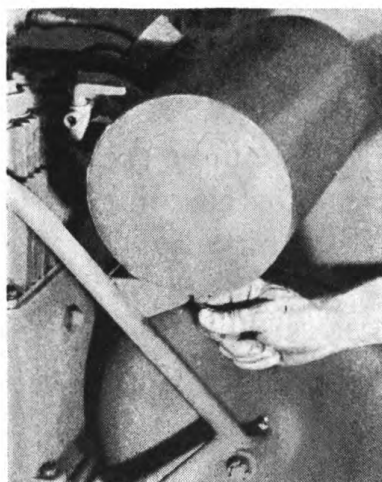


FIGURE 12

Compressor

1. Check oil level in crankcase of compressor. Add oil if necessary.
2. Drain moisture from air receiver tank by opening air receiver drain 2713. (See Figure 12.)

Periodic Inspection

Gasoline Engine

This inspection procedure should be followed at regular intervals depending on climatic conditions, but should not exceed 64 hours of operation:

1. Clean power unit. Remove obstructions from fan screen and air intake screen. Also remove air passage clean-out cap and clean out any dust, dirt or foreign particles which may have accumulated.
2. Close fuel tank shut-off valve. Remove fuel line and drain fuel from tank. Blow out fuel line and shut-off valve with compressed air. Re-install parts and refill fuel tank.
3. Remove drain screw from carburetor bowl. Drain fuel and flush bowl by opening fuel shut-off valve for an instant. In replacing drain screw, be sure gasket is in place under screw head.
4. Inspect for broken, missing or damaged parts. Also, check nuts, bolts, screws, etc., for tightness.
5. Inspect starter cable for possible need of replacement.
6. Remove spark plugs and clean. Do not take apart for cleaning; use a sand-blast cleaner. Check gap and adjust to .040" by bending **outer** electrode as necessary. If plugs are not in good condition, install new ones. See page 22 for proper spark plug.
7. Check governor-to-throttle linkage for binding or excessive play.
8. Check ignition timing. See Step 18 under "Reassembling Engine," Page 86.

9. Remove muffler and examine exhaust ports for excessive accumulation of carbon. See "Cleaning Carbon From Exhaust Ports," Page 77.
10. Start engine and check for all-around performance. Note any irregularities in performance or unusual mechanical noises which may indicate developing trouble.

Compressor

1. Once each week check compressor discharge line and fittings for leaks.
2. Once each week examine compressor intake filter 3227. (Often in extremely dusty locations.) If filter is dirty, it should be disassembled and cleaned as follows:
 - a. Unscrew wing nut. No further disassembly is necessary.
 - b. Wash screen thoroughly with gasoline. Dry completely before using.
3. Check the compressor crankcase breather 1679 opening. This should have approximately $1/32$ " movement. Check occasionally to make sure crankcase receives ventilation. Failure of breather to function may cause oil pumping.
4. It is important that all cylinder and head fins be kept thoroughly clean to permit efficient operation. If unit is allowed to be covered with grease, paint, and dirt it will run excessively hot.
5. Inspect for broken, missing or damaged

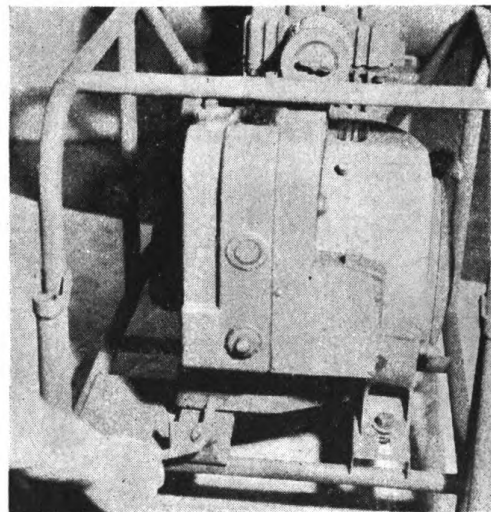


FIGURE 13

parts. Also check nuts; bolts, screws, etc., for tightness.

6. Check V-belts for tension. Do not tighten too much. Belts should have $\frac{1}{2}$ " deflection. Also check pulleys for proper alignment. Figure 13.
7. Report any irregularities in performance or unusual mechanical noises which may indicate developing trouble in either the compressor or gasoline engine.

HOW TO SPRAY

Use of Gun

The first requirement for a good resultant finish is the proper handling of the gun. The gun should be held perpendicular to the surface being covered, and moved in even strokes parallel with it. See Figures 14 and 15. The stroke should be started before the trigger is pulled and released before the stroke is finished. This is easy and

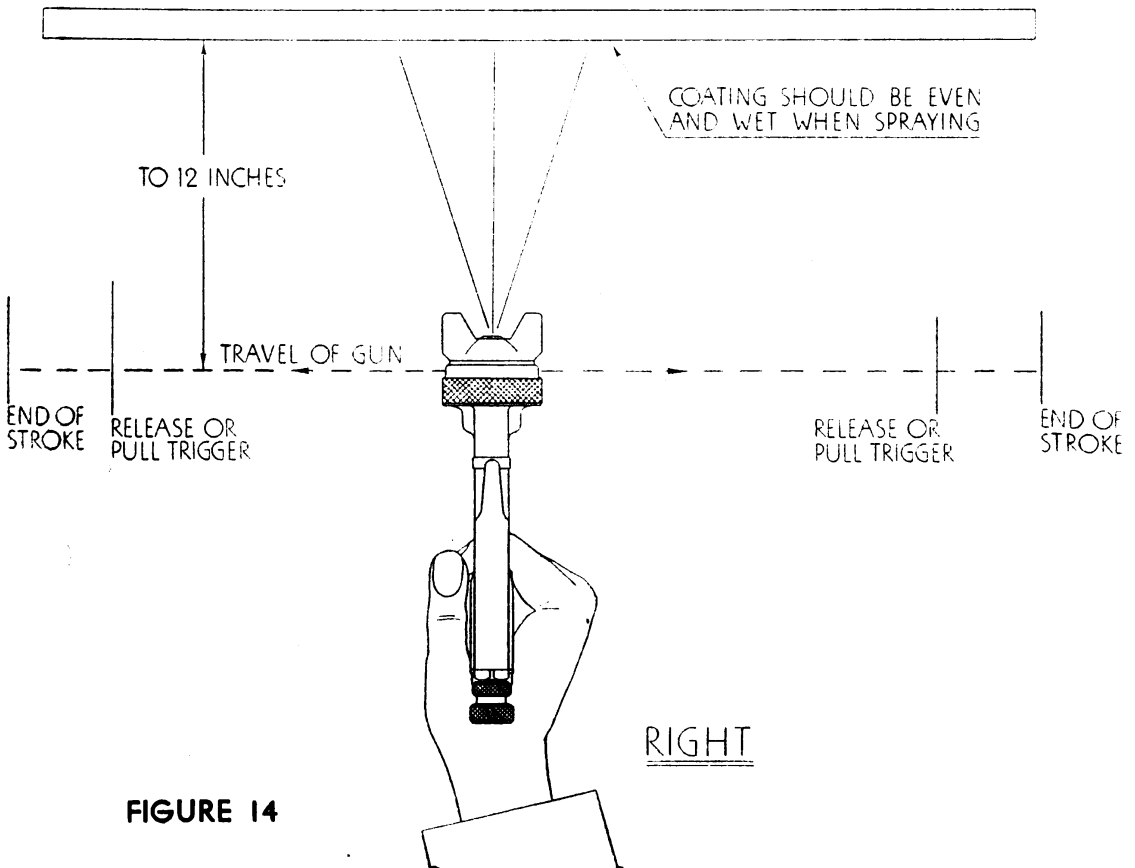


FIGURE 14

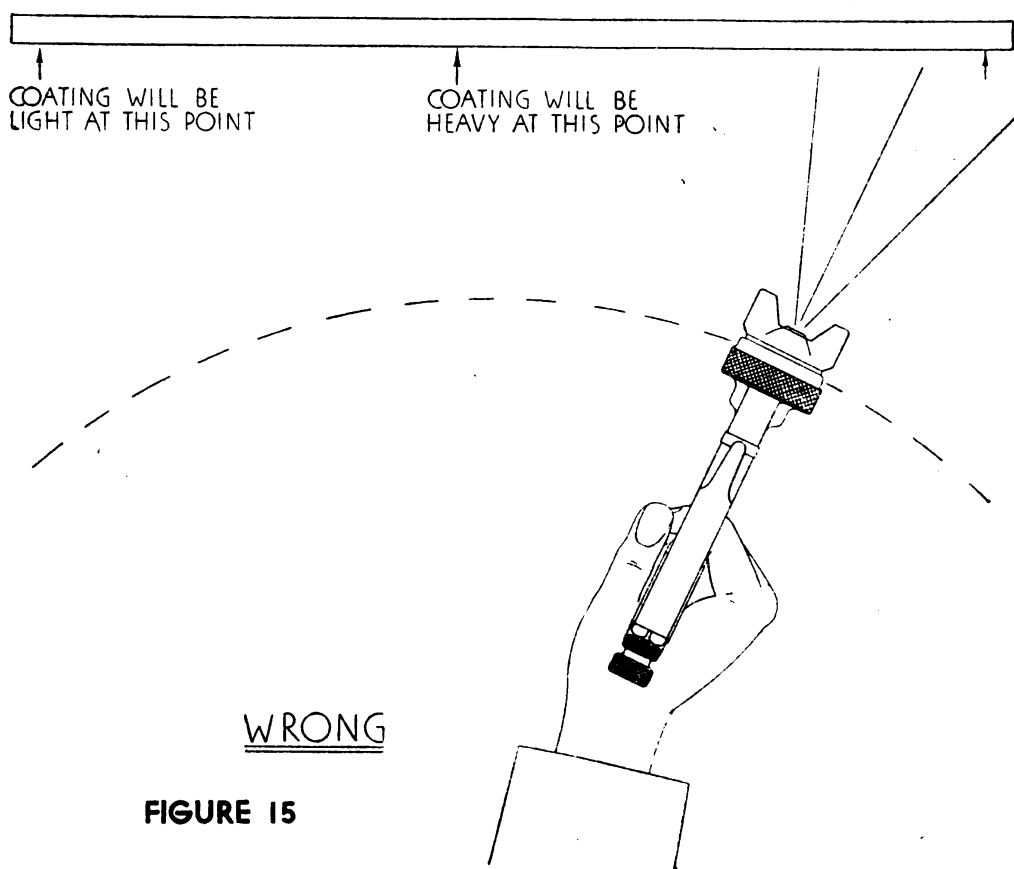


FIGURE 15

gives accurate control of the gun and material. The distance the gun is held from the surface being covered is determined by the material and atomizing pressure, and will vary from 6 to 12 inches, but the material deposited should always be even and wet. If the gun is moved in the horizontal plane, the air nozzle should be turned so that the fan spray has its long axis up and down, or at right angles to the motion of the gun. This is accomplished by loosening the knurled ring on the air nozzle and turning the nozzle to the required position and then tightening the ring.

Types of Nozzles

The spray gun is shipped equipped with an internal mix nozzle and an external mix nozzle is supplied in the spare parts packed in the chest.

The external mix can be identified by the two ears projecting forward. In this type of nozzle the air and

paint are mixed outside the nozzle and its main characteristic is that the resultant spray can be varied from a round cone spray to a flat fan spray. This is accomplished by the side port control key, but it must be remembered that as the fan is made wider, the material used should also be increased to get the same coverage.

In the internal spray nozzle the paint and air are mixed inside the nozzle and a fan spray will be the result—it cannot be changed. When this type of nozzle is used, the air pressure and the material pressure must be equal.

Recommended Pressures

The recommended pressures for the air and material when using paints, lacquers, or synthetics are:

Type of Nozzle	Air Pressure	Material Pressure
Internal Mix	40 to 60	40 to 60
External Mix	40 to 60	5 to 15

TROUBLES ENCOUNTERED IN SPRAYING

The most common causes of poor finish when spraying, if the gun is properly handled, are: spitting, faulty patterns, and improper setting of the air and material controls.

Spitting

Spitting may be defined as a jerky intermittent or fluttering spray. It is caused by the air bubbles in the paint, and the following should be checked to correct the trouble.

1. **Loose needle packing nut or dried out packing.** To correct, back up packing nut, place two drops of machine oil on packing, replace nut and tighten only with fingers. In aggravated cases replace the packing.
2. **Damaged or loose material nozzle, or dirt between material nozzle and gun body.** If the nozzle seat is damaged it must be replaced. A spare is provided in

the spare parts box. If dirty or loose, remove nozzle, clean back of nozzle and nozzle seat in gun with rag wet with solvent. Replace nozzle and draw tightly against body.

3. **Loose hose connection.** To correct, make sure all connections are clean and tight.
4. **Empty material container.** To correct, simply fill tank with a sufficient supply of material.

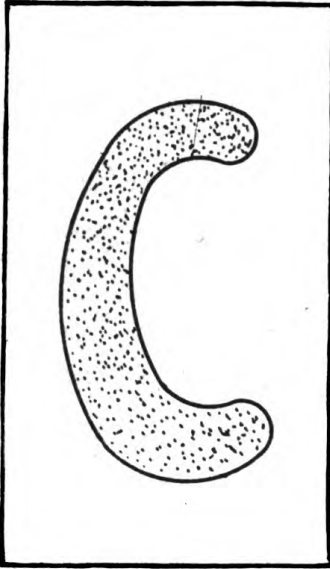
Improper Controls

If the gun is not adjusted properly for the material being sprayed, any one of the following finishes may result.

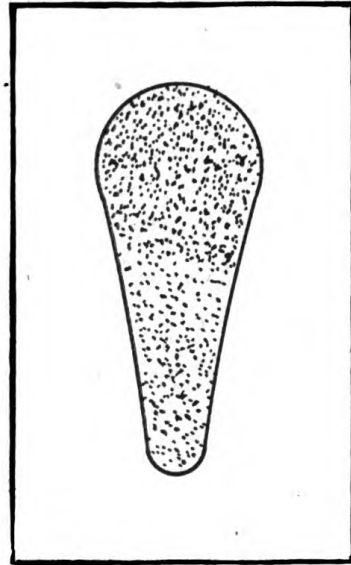
1. **"Orange peel"** or a rough cobblestone appearance of the finished job is caused by one or a group of the following:
 - a. Too low an air pressure.
 - b. Gun too close or too far from surface.
 - c. Material not thoroughly mixed.
 - d. Humidity or draft condition poor.
2. **"Sags and runs"** are caused by too much material being applied or the material being applied too thin. To correct, be sure the gun is held at right angles to the surface and be sure the strokes of the gun are rapid enough for the amount of material being sprayed. If the speed of the strokes cannot be increased, cut down on the material by cutting the pressure or by turning in the material control screw.
3. **"Misting"** is caused by too high an air pressure, or the gun held too far from the surface.

FAULTY PATTERNS

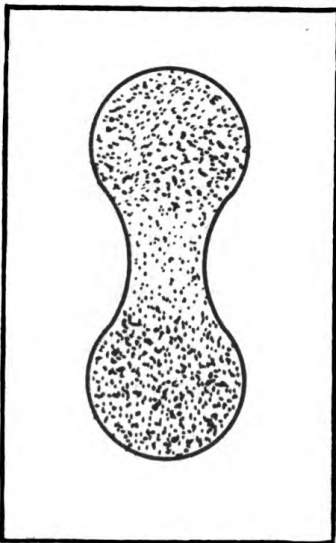
FIGURE 16



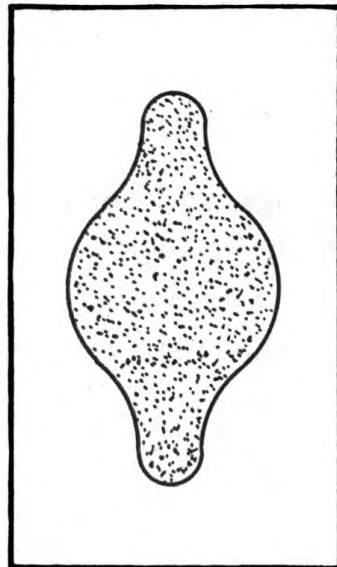
TYPE A



TYPE B



TYPE C



TYPE D

Faulty Patterns:

By referring to Figure 16, the different types of distorted spray patterns that may be obtained with an external mix nozzle are illustrated. To check the spray pattern of a gun, select a flat surface with a color different than that of the paint being used. Hold the gun stationary about 10 inches from the test surface and pull the trigger just long enough to get a clear cut pattern.

1. If the pattern is **crescent shaped** as Type A, the trouble is caused by a dirty or damaged side port hole. To clean the nozzle, soak in a solvent and clean with the brush that is provided. If the obstruction cannot be removed in this manner, a tooth pick or match stick may be used, **BUT DO NOT USE ANY METAL OBJECT IN CLEANING GUN OR NOZZLE**. Regardless of how much care is taken, the use of a metal object will make these highly machined parts unfit for further use.
2. If the pattern is **wedge shaped** or heavy at the top as Type B, the trouble is caused by dirt around the center hole or dirt on the inside seat of the air nozzle. Again, the nozzles should be cleaned by soaking and brushing with a solvent.
3. If a **split pattern, heavy on both ends**, is obtained in the test, such as Type C, the trouble is caused by gun adjustment. To correct, either decrease the fan by turning the side port key counter clockwise or increase the material pressure.
4. If a **heavy center pattern** is obtained, the trouble is caused by too low an air pressure. To correct, increase the air pressure or decrease the material pressure.

To correct the above troubles, it will be necessary for the operator to use the "trial and error method" and experiment until he can tell at a glance just what is out of adjustment or what is damaged that is causing the unsatisfactory appearance of the finish.

TROUBLES ENCOUNTERED WITH ENGINE

If engine fails to start, it may be due to one or more of the following conditions:

1. **Fuel tank empty.** Refill tank with recommended fuel mixture.
2. **Fuel shut off.** Open fuel shut-off valve.
3. **Fuel feed line clogged.** Remove feed line and clean out with compressed air or a piece of wire.
4. **Spark plugs fouled.** Remove spark plugs, clean and re-install.
5. **Engine flooded.** Close fuel shut-off valve, remove spark plugs and crank engine several times. Keep fuel shut off, re-install spark plugs and crank engine several more times. This procedure will exhaust excess fuel.
6. **No spark or very weak spark.** See "Servicing Ignition System," Page 87.

If engine starts but runs irregular and misses, it may be due to one or more of the following causes:

1. **Fuel tank cap vent clogged.** Remove cap, open vent, and blow out with compressed air.
2. **Fuel feed line obstructed.** Remove feed line and clean out with compressed air or a piece of wire.
3. **Carburetor air intake screen clogged.** Screen must be free of any obstructions.
4. **Defective spark plugs.** See that spark plugs are clean and gaps are correctly adjusted. If condition of plugs is questionable, install new ones.
5. **Water or dirt in carburetor.** Open tank cap vent screw and close fuel shutoff valve. Remove carburetor bowl drain screw and gasket. Drain bowl and flush out sediment or water which may be present in bowl. Re-install bowl drain screw and gasket.

6. **Crankcase leaks.** Check joints and gaskets for leakage.
7. **Poor compression.** Check compression of each cylinder by operating starter slowly.
8. **Intermittent short or open circuit in wiring.** Check wiring for damaged insulation and loose or corroded connections.
9. **Weak or intermittent spark.** See "Servicing Ignition System," Page 87.
10. **Defective intake valve reeds.** See Step 1 under "Reassembling Engine," Page 78.
11. **Carburetor out of adjustment.** See "Adjusting Carburetor," Page 44.

TROUBLES ENCOUNTERED WITH COMPRESSOR

If compressor does not pump normal amount of air:

1. Check intake filter to be sure it is clean.
2. Be sure engine is operating properly and developing sufficient speed.
3. Check V-belts to make sure they are not slipping.
4. Check for air leaks in fittings and hose.
5. If intake filter is clean, remove filter and hold hand over compressor intake while machine is running to see if suction is normal. If suction is weak, proceed as follows:
6. Make sure compressor is not running unloaded. This may happen if the wing nut on the VD pilot has been tightened. Remedy is to back wing nut on VD pilot at least one thread away from hexagon screw. Also see VD pilot unloader, Page 102.
7. If unloader pilot is functioning properly, the next step is to remove intake and discharge valve assem-

blies to make sure no foreign matter has lodged between intake valves and seats. See Maintenance Manual Section, Page 95.

If compressor does not automatically load (start to pump air):

When pressure in receiver drops below 70 lbs. (approx.) or does not unload when pressure reaches 80 lbs. (approx.) check the following points:

1. Make sure wing nut of VD pilot is far enough away from hexagon screw to permit free movement.
2. Make sure that screws 1112 are tight. If loose they will permit air pressure to escape and compressor will not unload properly.
3. Bleed air from receiver (be sure unit is first stopped), disconnect tubing 3233. Now unscrew cap 1792 from VD pilot, remove screens and felt.
4. If felt and screens are clogged with dirt, or other foreign matter, wash thoroughly with gasoline. Make sure that tubing 3233 leading from receiver to VD pilot is entirely open and clean. Reassemble.

ENGINE ADJUSTMENTS

Adjusting Carburetor

Carburetor is correctly adjusted before unit leaves the factory, and further adjustment should not be necessary, except for operation in extreme temperatures.

Before Adjusting Carburetor

Before attempting to correct faulty engine performance by readjusting carburetor, check for other possible remedies as outlined in "Troubles Encountered in Engine."

Adjustments Provided

Carburetor is provided with two adjustable needle valves, one for idling speed mixture, the other for high speed mixture. Idling speed needle valve (SKA-3019), with knurled head, turns to right (inward) for richer mixture, to left (outward) for leaner mixture. High speed needle valve (SKA-3023) turns left (outward) for richer mixture, right (inward) for leaner mixture.

How to Adjust Carburetor

If it is known that faulty engine performance is due to carburetor being out of adjustment, readjust as follows: Start engine and, after it has warmed up thoroughly, set choke in fully-opened position (choke knob pushed way in).

High Speed Adjustment—With engine running at normal maximum operating speed and under normal load, loosen gland nut on high speed needle valve and turn needle valve to right (inward) until mixture becomes too lean and engine starts to miss and slow down; then back it up slowly ($\frac{1}{4}$ to $\frac{1}{2}$ turn) until engine runs smoothly.

Idling Speed Adjustment — Idling speed adjustment must be made without load; therefore first loosen and remove drive belts. Start engine and hold governor-to-throttle rod in closed-throttle position. Turn idling speed needle valve inward until engine starts to fire unevenly due to an over-rich mixture; then back it up slowly to position where best idling performance is attained. Lock needle valve in this position by tightening lock nut.

Re-install and adjust drive belts. Again start engine and recheck high speed mixture; readjust if found necessary. Then lock needle valve in position by tightening gland nut securely.

PREPARATION OF MACHINE FOR INITIAL OPERATION

Compressor and Engine

1. The compressor unit is shipped with the wheel bolted beneath the frame. First remove mounting bolts from box skid, lifting frame from the skid.
2. Remove axle from frame where it is held in place by tape. The axle has been processed and the protective material used must be removed with naphtha or gasoline before installing.
3. Remove wheel from skid and fasten in place. This is accomplished by placing wheel in position, next place steel washers on inside of hub. Put axle through hub, fastening in place through use of castellated nut and cotter pin on each end.
4. Fill compressor crankcase with proper grade of lubricating oil (See Lubrication of Compressor).
5. Remove paper wedge under breather opening located on fly-wheel side directly above the crankshaft—see figure 17.
6. Remove tape wrapped around air intake filter.
7. Remove tape from exhaust pipe of engine.
8. Fill gasoline engine fuel tank with gasoline and oil mixture. (See Engine Lubrication.)
9. Open air outlet valves.
10. Now you are ready to start engine.

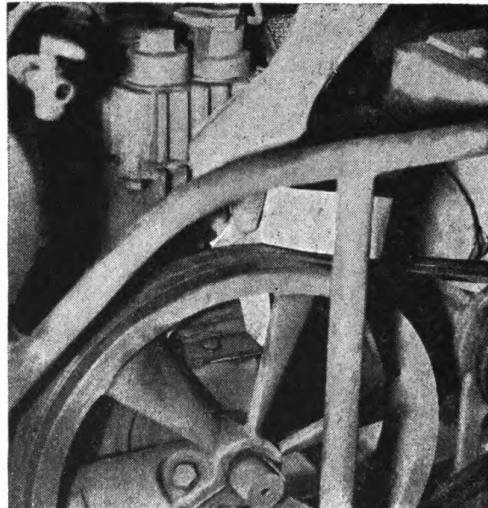


FIGURE 17

Spray Equipment

When the equipment is shipped it is completely processed to prevent corrosion and rust. Therefore, before it can be used it should be washed with fuel oil or solvent, dry cleaning.

ABNORMAL CONDITIONS

Spray Equipment

The equipment will operate under any abnormal condition provided that the material or paint is not affected. If in extreme cold the material viscosity becomes heavy, it will be necessary to increase the material pressure, or if in extreme heat the material viscosity is light, the material pressure should be decreased.

It is also well to remember that paint and most other material will not stick to wet surfaces. Therefore, do not attempt to spray in rain unless the object is under cover and dry.

Compressor and Engine

How to facilitate starting in extremely cold weather.

1. Make sure light weight lubricant is used in compressor crankcase.
2. Loosen bolts holding gasoline engine mounting feet to frame. Then release belt tension by turning belt adjustment device.
3. Start engine without any compressor load, allow it to warm up. Then stop engine when warm.
4. Tighten belt tension, and check belt alignment. Tighten bolts to fasten engine securely to frame.
5. Start engine as always.

PREPARING EQUIPMENT FOR LIMITED STORAGE

If the equipment is to be put in storage, the following procedure should be followed so that the equipment will not be damaged by rust and corrosion.

Spray Equipment

Gun: The gun should be thoroughly cleaned of all paint. Then put a few drops of rust preventive oil such as U. S. Army specification OE-10 or AXS-934 (SAE 30) in the air and material passage, and blow air through the gun to distribute the oil.

Tank and Regulator: The tank should be cleaned of all paint inside and out, the cover put on and pulled up tight and all cocks shut off.

Extension: Remove all paint and place a few drops of OE-10 or AXS-934 oil on inside of both tubes. Rub a film of rust preventive oil on needle valve and pack in chest.

Hose: Remove all paint, grease or oil that is on the hose. Roll and pack in chest.

Tools: Coat with a film of rust preventive oil and pack in chest.

Compressor

1. Check the compressor oil and replenish if necessary using recommended grade for temperatures anticipated during the storage period. See Page 26 for proper lubricant to use.
2. Run compressor so as to distribute the oil throughout. See points 1, 2, and 3 under engine.
3. Remove air intake filter and pour approximately 2 ounces of OE-10 or AXS-934 oil into compressor head.

Gasoline Engine

1. Remove air passage clean-out cap.
2. Start engine and allow it to run at normal operating speed.
3. Inject two ounces of OE-10 or AXS-934 (SAE-30) into carburetor choke through clean-out passage opening. Stop engine as soon as excessive exhaust smoke indicates oil is passing through.
4. Drain fuel from tank by removing carburetor bowl drain plug (SKA-3013) and opening fuel shut-off valve and tighten fuel tank vent screw.
5. Remove spark plugs, inject one ounce of OE-10 or AXS-934 (SAE 30) into each cylinder and replace spark plugs.
6. Operate starter vigorously, six full strokes. This will distribute the rust preventive oil on the cylinder walls, rings and spark plugs and will force some of it into the muffler and exhaust pipe.
7. Cover exhaust pipe opening to prevent ingress of moisture.

PREPARING EQUIPMENT FOR DEAD STORAGE

If the equipment is to be placed in dead storage or stored for a period exceeding thirty days the following procedure should be used.

Spray Equipment

Gun: The gun should be thoroughly cleaned of all paint and dirt. Then coated internally with AXS-934 (SAE 30) by placing a few drops of the oil in the material and air passages and blowing through with compressed air. The outside should then be coated with AXS-673

and the completely processed gun wrapped in a Grade C paper.

Tank and Regulator: The tank should be cleaned of all paint inside and out and then coated with AXS-673. Replace the cover clamping it tight, and be sure all cocks are shut off to prevent ingress of moisture to the regulator or tank. The tank can then be placed into the chest.

Extension: Remove all paint and place a few drops of AXS-934 oil inside and outside of both tubes. Then wrap in a grade C paper. The needle should be cleaned and then coated with a rust preventive film and packed with the extension in the chest.

Hose: The hose should be cleaned of all paint, grease, or oil. Then rolled and packed into chest.

Tools: Clean the tools of all foreign matter, coat with a rust preventive film and wrap in a grade C paper.

Compressor and Engine

Refer to TM5-9715, Instructions for Preparation of Corps of Engineers Equipment for Storage, Issued by Engineers Field Maintenance Office, P. O. Box 1679, Columbus, Ohio.

PREPARATION FOR SHIPMENT BY TROOP ORGANIZATIONS

In shipping the equipment, the chest and the compressor should be protected by boxing. It is recommended that the box be made large enough to contain both units so that they will not be separated in shipping. It will be noted by inspecting the wheelbarrow that provisions have been made for bolting to a skid. These holes are located in the flanges on the legs at the rear and in the mounting channels just forward of the compressor. The rear can be bolted directly to the skid while the front

requires a 2 x 4, on edge notched out for the tubular frame, for spacing the bolts. The recommended pack is having the chest and wheelbarrow side by side blocking the chest with 2 x 4's and bolting the wheelbarrow to the bottom. No disassembly of the compressor is required and only caution for the chest is to be sure all equipment is in its proper place and the hold down blocks are on the pressure tanks.

PREPARATION FOR EXPORT SHIPMENT

To prepare this equipment for export refer to TM5-9711—Preparation of Corps of Engineers Equipment for Export, issued by Engineers Field Maintenance Office, P.O. Box 1679, Columbus, Ohio.

TM5-9324

SECTION II

MAINTENANCE MANUAL

BINKS THOR MODEL 17-A SPRAY GUN

Air Connection: To remove the air connection T-1033, it is only necessary to unscrew.

Trigger: To remove the trigger, unscrew the trigger screw L-126 from the trigger stud T-1020.

Material Control Screw: To remove the material control screw T-1007 unscrew, taking care that the spring L-33-A is not lost when the end of the threads are reached. When the screw T-1007 is removed, the spring L-33-A can be taken from gun.

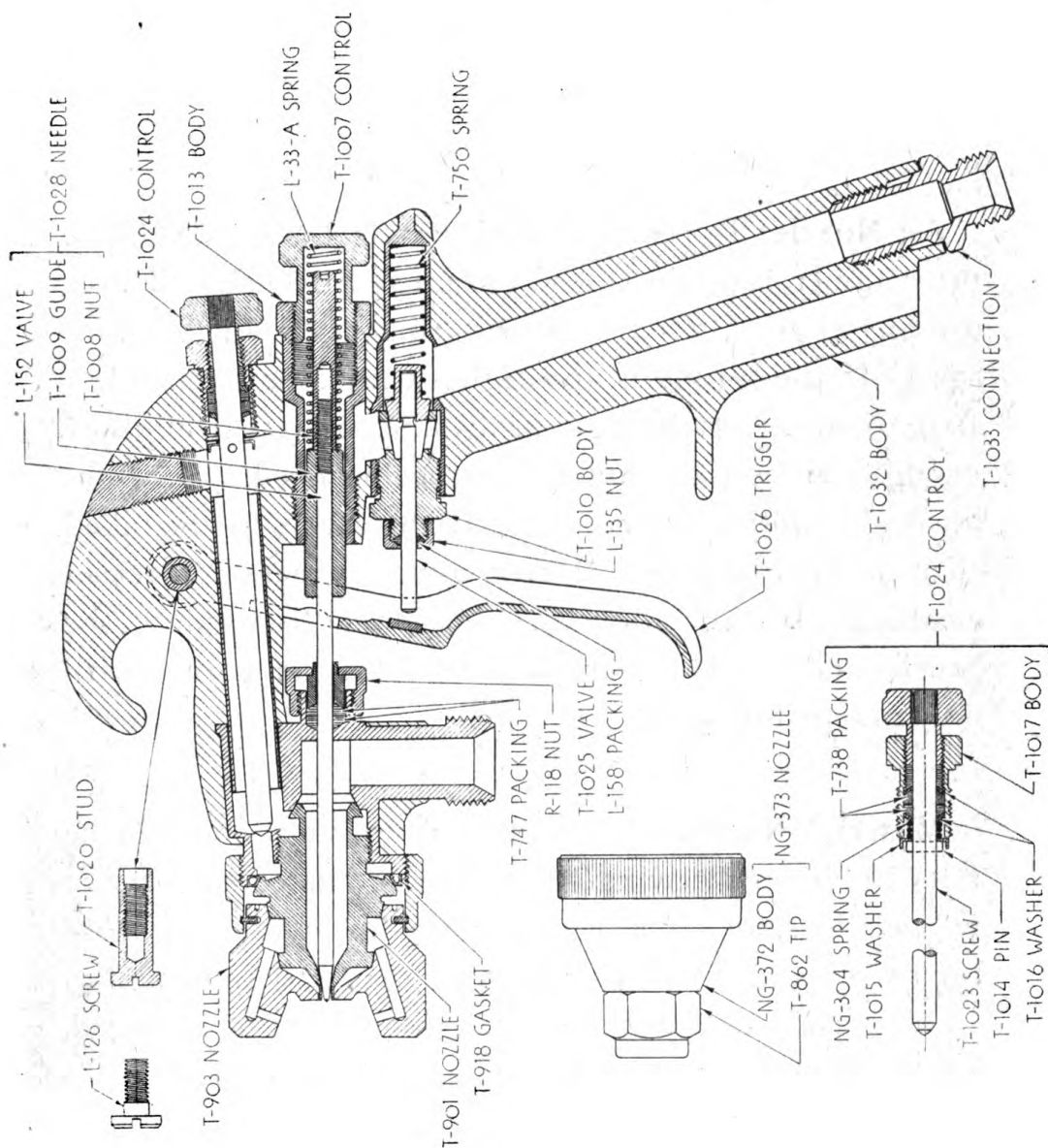
Needle Valve: After the material control screw T-1007 is removed, the needle valve assembly T-1024 can be pulled from gun. To adjust the needle, loosen the lock nut T-1008 and set the needle guide T-1009 to the new position and tighten. The proper adjustment for the needle is when the needle is replaced in the gun and the trigger pulled, the trigger plate will contact the air valve stem T-1025 and still have 1/32 to 1/16 inch clearance between the needle guide T-1009 and trigger.

Air Valve: The complete air valve assembly can be removed by unscrewing. To replace the air valve packing L-158, unscrew L-135 nut. If packing is dry, saturate with two drops of machine oil. Before reassembling, be sure the air valve stem assembly T-1025 and the air valve body T-1010 are clean, as any dirt which may lodge between them will cause the gun to leak.

In reassembling, the air valve should only be pulled up snug as if it is pulled very tight the valve body T-1010 will be distorted and cause the valve to leak.

BINKS THOR MODEL 17-A SPRAY GUN

FIGURE 18

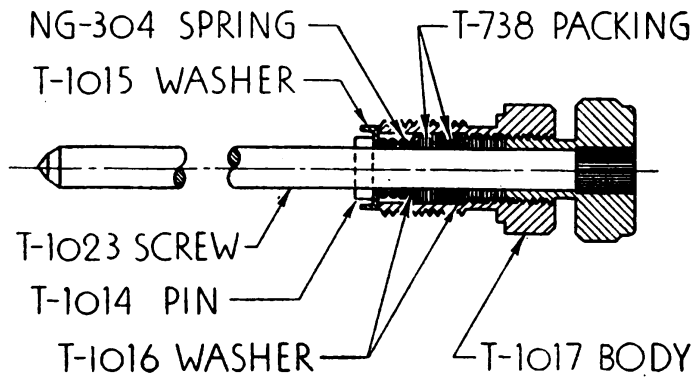


Needle Valve Packing: To replace the packings T-747, it is necessary to remove the needle valve T-1028. After this the nut R-118 can be unscrewed and the packing can be removed. Do not remove this packing unless it is to be replaced, as in most cases it is necessary to destroy the packing in order to get it out. In everyday use the packing should be oiled. To oil, it is only necessary to unscrew the nut R-118 and slide it back on the needle so that the oil can be placed on the packing.

Air Nozzle: To remove the air nozzle T-903 or NG-373, the retainer ring should be unscrewed by hand. Never use any type of wrench on this ring or it will be damaged. If the nozzle is too tight to remove by hand, a strip of emery cloth wrapped around the ring will allow enough friction so that it can be loosened. In cleaning and handling the nozzle, extreme care must be taken so it is not damaged. Never use any metal object in cleaning. If very dirty or plugged, a toothpick, the brush, and a good soaking will clean the nozzle with no danger of damage.

Material Nozzle: The material nozzle T-901 can be removed by unscrewing. Care must be taken so that the wrench does not slip as the nozzle is finished to very close tolerances and any nicks will cause the spray to be faulty. In all normal cleaning the nozzle should not be removed, but should be cleaned while in the gun to hold the chances of damage to a minimum.

The gasket T-918 is constructed so that it should last the life of the gun and should not be removed unless it has been damaged and replacement is necessary.



SIDE PORT CONTROL 17-A GUN

FIGURE 19

Side Port Control: To remove the side port control assembly T-1024, unscrew the body T-1017 from the gun body. To disassemble the side port control, first screw the control screw T-1023 all the way into the body T-1017. Next press washer T-1015 toward body depressing spring NG-304, and remove pin T-1014. This will allow the washer T-1015 and the spring NG-304 to be removed. Then the control screw T-1023 can be unscrewed from the body T-1017 and the two washers T-1016 and the two packings T-738 pressed from the body. If the packings T-738 are dry, soak with a few drops of machine oil.

When reassembling the side port control assembly T-1024 into the gun, be sure that the control screw is turned as far out of the body as it will go. If this is not done the seat in the gun or the control screw will be damaged.

Material Control Body: To remove the material control body T-1013, it is only necessary to unscrew.

AIR CONTROL UNIT

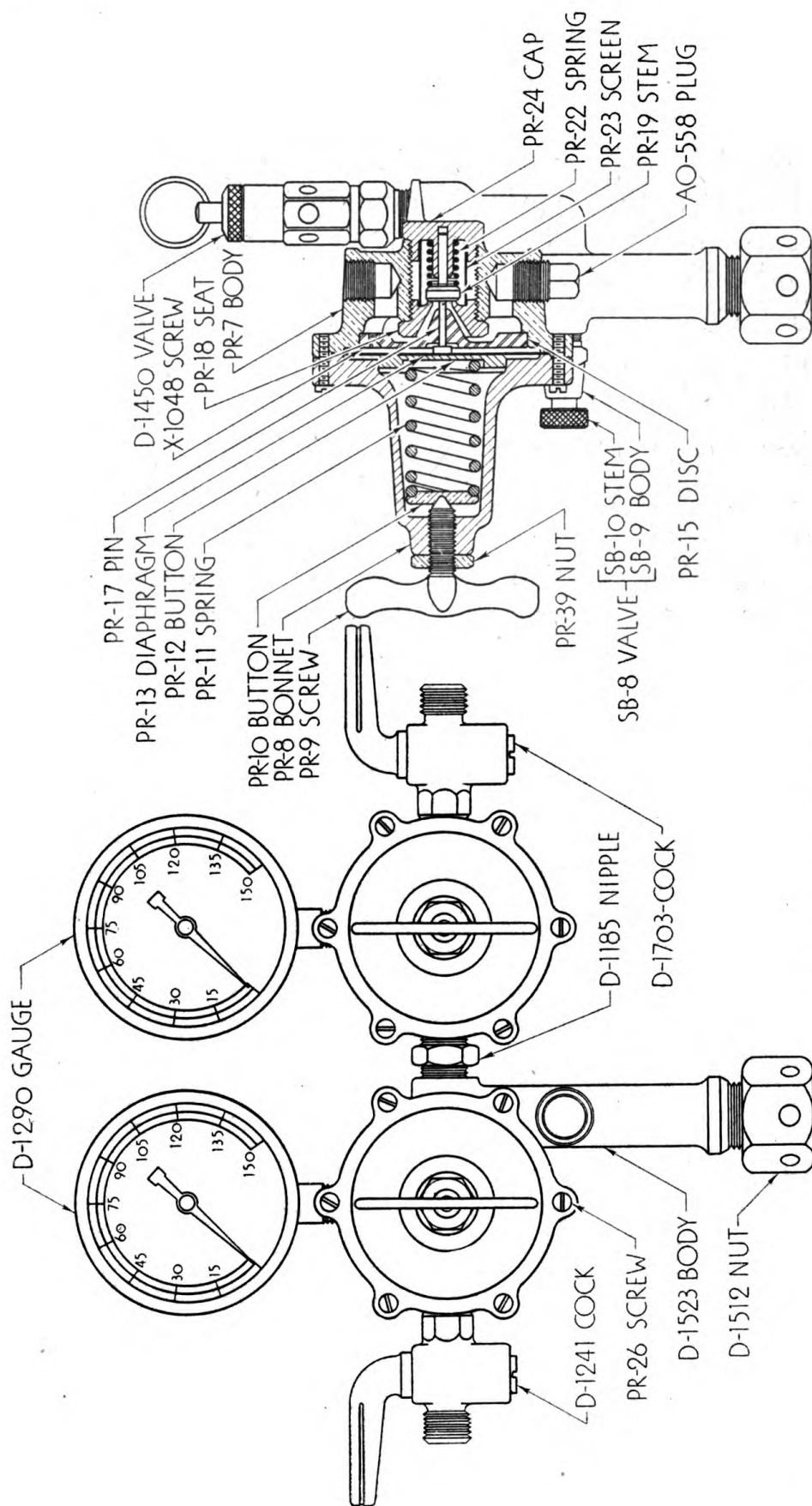
Regulator: The 82-U air control unit is removed from the tank by removing the nut D-1512. As the air control unit is composed of two regulators that are identical in construction, with the exception of the bodies, the troubles encountered and the steps in disassembling one unit only need be discussed.

The troubles encountered in a regulator and their identifying characteristics are as follows:

1. The most common trouble is caused by **dirty or damaged PR-19 stems**. A damaged or dirty stem in the regulator will cause the pressure of the regulated air to climb to the main line pressure when the gun is not in use. To correct, the seat must be removed (see procedure outlined on page 60) cleaned if dirty, and replaced if damaged. In some cases the trouble may be caused by the seat PR-18. If the seat is nicked or pitted, it should be replaced; if dirty it should be cleaned.
2. Another cause of regulator trouble is a **broken diaphragm PR-13**. This will cause the pressure of the regulated air to drop way down when the trigger of the gun is pulled. Another indication of a broken diaphragm is the noise of air escaping in the regulator.
3. The third cause of trouble is the **screen PR-23**. If this screen is allowed to become filled with dirt, it will not allow enough air to pass. Consequently, the pressure of the regulated air will have a large drop when the gun is used.

Pop Valve

The pop valve D-1450 is an A.S.M.E. inspected safety valve and is sealed. It should never be disassembled except at the factory. If the pop valve fails to operate satisfactorily, it must be replaced. To remove the pop valve it is only necessary to unscrew.



BINKS MODEL 82-U AIR CONTROL UNIT
FIGURE 20

Steps in Disassembling Regulator

To disassemble the regulator, the following steps should be taken:

1. Loosen wing screw PR-9 until all tension is released.
2. Loosen and remove the six screws PR-26 and lift bonnet PR-8 from body. The two buttons PR-12 and PR-10 with the spring PR-11 can now be removed from bonnet.
3. Remove diaphragm.
4. Remove pin PR-17.
5. Unscrew the two screws X-1048 and remove disc PR-15.
6. Unscrew seat PR-18—this seat should not be removed unless damaged and replacement is necessary.
7. Unscrew cap PR-24 which will allow the screen PR-23, the spring PR-22, and the stem PR-19 to be removed from body.

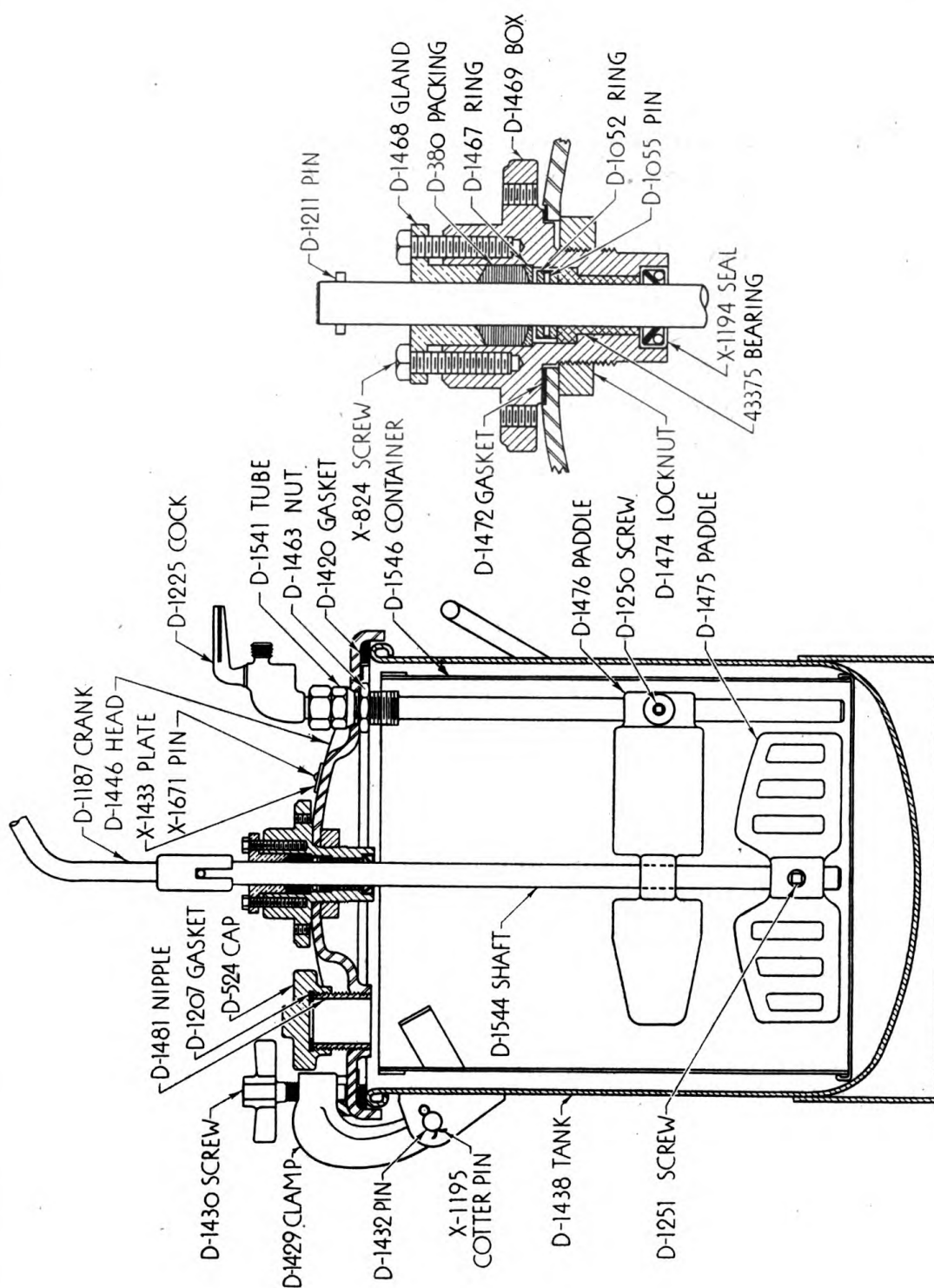
In reassembling the regulator, the following points should be checked:

1. Be sure the screen, stem, and seat are clean.
2. Be sure the offset for the diaphragm and the diaphragm itself are clean.
3. In replacing bonnet, the six screws should all be screwed up snug, and then tightened evenly all the way around.

Gauges

The gauges D-1290 are not repairable and if they should fail to operate, it will be necessary to install a new one. A spare gauge is carried in the repair parts box.

To remove the air pressure gauges, it is only necessary to unscrew. To remove the material pressure gauge, the pop valve D-1450 must first be removed before this gauge can be unscrewed.



BINKS MODEL TU-5-A PRESSURE TANK
FIGURE 21

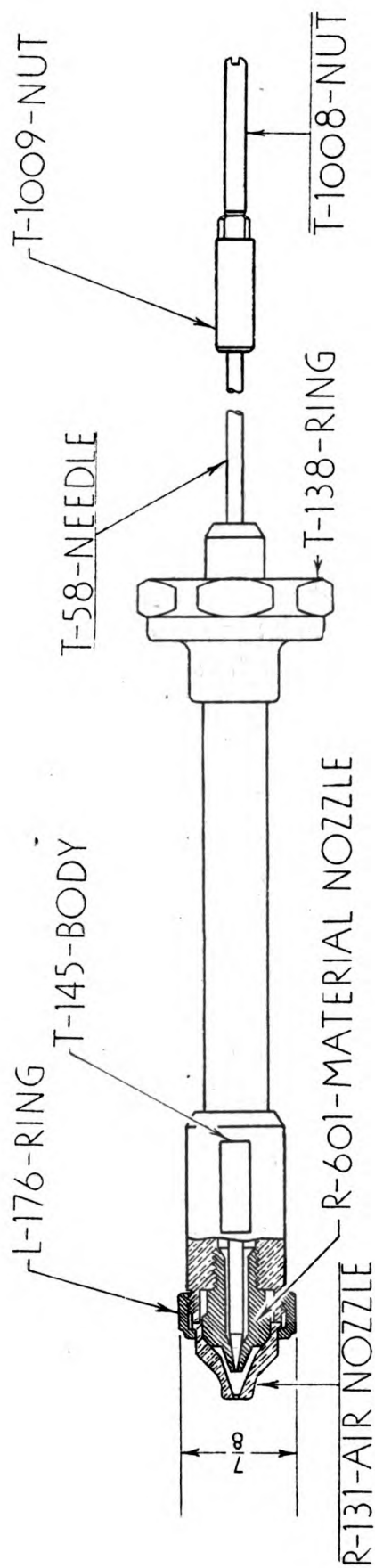
TANK

Gasket: The tank gasket D-1420 should not be removed until it no longer holds the air pressure in the tank. To replace the gasket when a new one is required, it is best to use a wooden block and drive the gasket in place, taking care that it is not stretched or the excess length will cause trouble when the last portion is pressed in.

Stuffing Box: To remove the stuffing box, it is first necessary to remove the paddles. To disassemble the paddles, loosen the set screws D-1251 and D-1250 and slide the paddles off of the shaft. Next unscrew locknut D-1474 (this nut has a left-hand thread) so stuffing box and shaft can be taken from head. The stuffing box can be disassembled by removing the two screws X-824 and pulling the shaft D-1544 up and out. The stuffing box is equipped with an oil impregnated bearing and an oil seal. The only time they should be removed is for replacement. To replace, drive out the old bearing and oil seal and press in the new parts.

When the stuffing box is disassembled, the string packing D-380 can be readily replaced, but it is not necessary to disassemble the unit to service the packing. If during regular service, the packing needs replacing or servicing, it can be done by removing the two screws X-824 and raising the packing gland D-1468. This will expose the packing so that it may be oiled with a few drops of machine oil or replaced. As the packing is used with a hand agitator, about the only service it will require is a periodical lubrication and tightening of the two bolts X-824.

Material Tube: The material tube D-1541 can be removed by unscrewing the Nut D-1463. The cock D-1225 can be removed from the material tube by the swivel nut which is a part of the cock assembly. The cock should not be disassembled as the parts are individually fitted, and consequently not interchangeable. If the cock is damaged, it must be completely replaced.



BINKS MODEL 17EAX-18 EXTENSION

FIGURE 22

EXTENSION

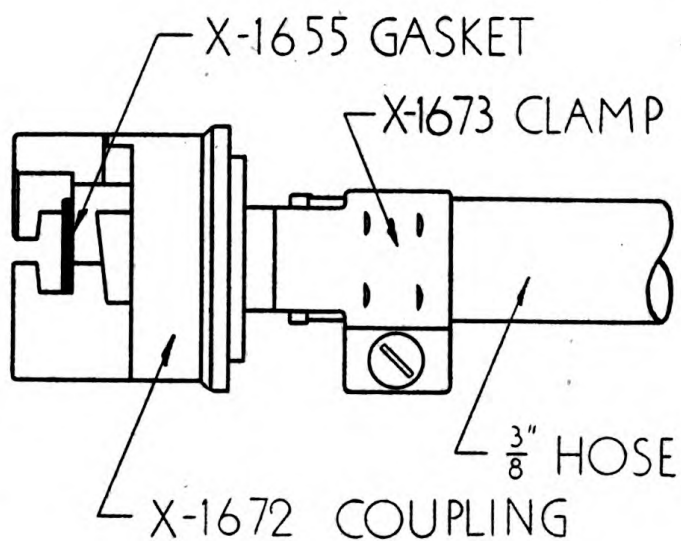
To disassemble and service the 17 EAX-18 extension, the following method is recommended:

To remove nozzles, first remove the retainer ring L-176 by unscrewing. Then the air nozzle R-131 can be slipped from the material nozzle.

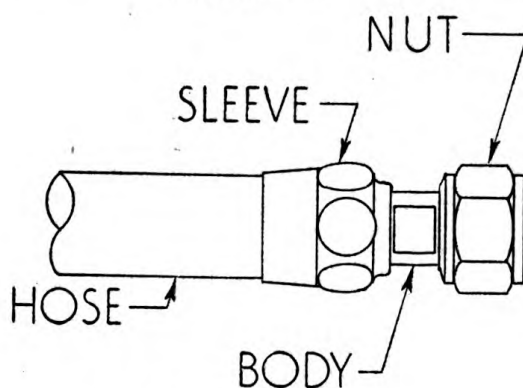
To remove the material nozzle R-601, unscrew. As these nozzles are delicate, care must be taken so they are not injured when being removed and cleaned.

At times it may be necessary to adjust the needle T-58 because of wear. To adjust needle, loosen the lock nut T-1008 and set the needle guide T-1009 to the new position and tighten lock nut. The position can be determined by having extension mounted to gun and placing needle in operating position; then pull gun trigger. The trigger plate should contact the air valve stem of the gun and still have 1/32 to 1/16 inch clearance between it and the needle valve.

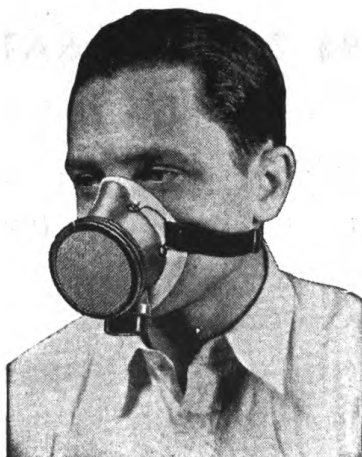
**QUICK DETACHABLE HOSE COUPLING
FIGURE 23**



**SCREW TYPE HOSE COUPLING
FIGURE 24**



**BINKS 2-A RESPIRATOR
FIGURE 25**



HOSE

The couplings supplied on all hose are of the removable type. The quick detachable type are removed by loosening the screw type clamp and pulling hose from tail piece.

If a hose is damaged near a screw type coupling, the following procedure should be used to repair it so that the major portion of the hose can still be used:

1. Remove coupling from hose by unscrewing the body from the sleeve.
2. Cut damaged portion of hose off.
3. Clamp the sleeve in a vise, or if no vise is available it may be held with wrench.
4. Press the hose into the sleeve. Be sure that pressure is applied to hold the hose against the shoulder in the sleeve as operation 5 is being performed.
5. Dip the body part of the connection in water to lubricate (do not use oil as oil will rot the rubber of the hose); then screw it into the sleeve, using the flat surface of the body part of the connection to engage the wrench.

BINKS 2-A RESPIRATOR

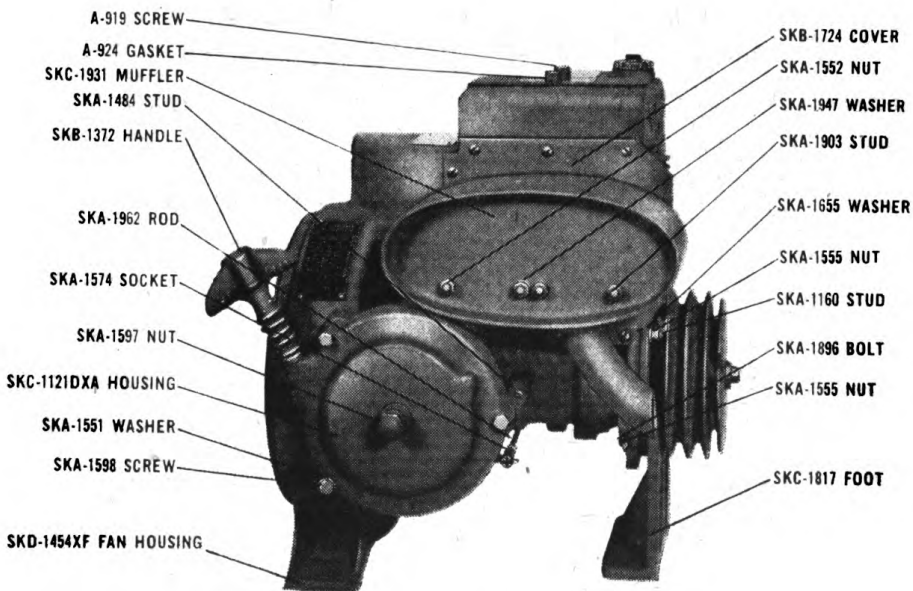
Wear the headbands below the ears as shown in illustration. See that they are properly adjusted so that the respirator fits the face snugly. Change filter when resistance to breathing becomes noticeable. To insert new filter, remove screw cap. Proper care of your Binks Victor Respirator will maintain its easy breathing quality, its comfort and its efficiency.

DISASSEMBLING ENGINE

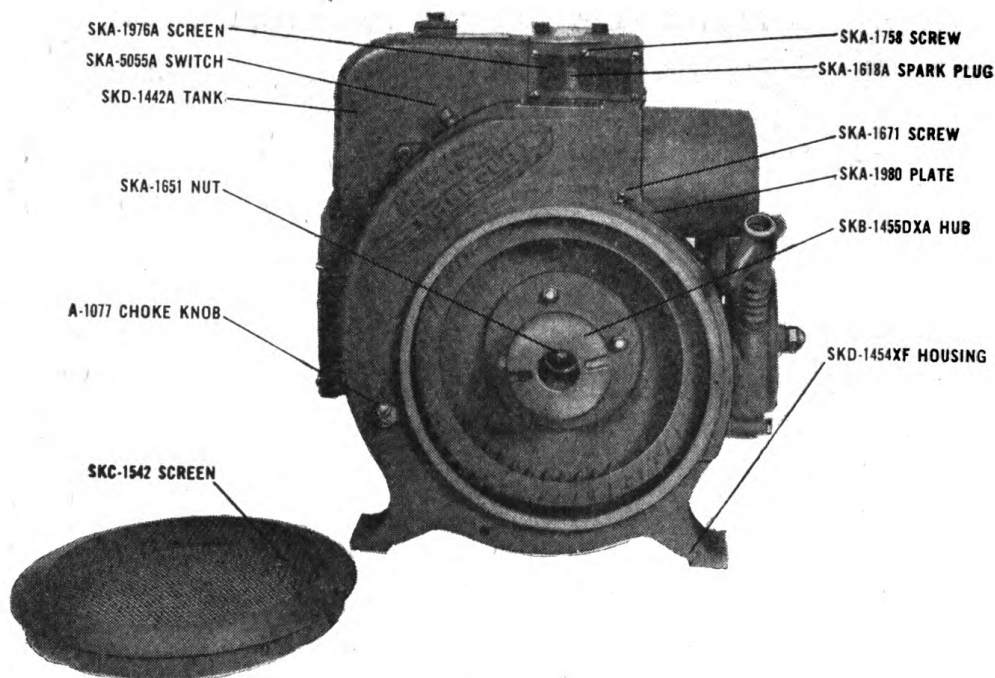
1. Remove starter assembly (SKD-1121 DXA) by taking out the three hexagon-head cap screws (SKA-1598) and plain washers (SKA-1551) which secure starter housing to fan housing (SKD-1454XF) and to starter support stud (SKA-1484). For complete details on disassembling starter assembly see "Servicing Starter Assembly," Page 91.

2. Remove muffler (SKC-1931), cylinder cover (SKB-1724) and exhaust manifold (SKB-1443D). First remove the four nuts (SKA-1552) and lock washers (SKA-1947) from exhaust manifold studs (SKA-1903); also remove the eight cylinder cover screws (SKA-1636). Muffler, cylinder cover and exhaust manifold are then free to be removed from studs.

Note that three gaskets are assembled on each pair of exhaust manifold studs—one on each side of exhaust manifold and one between cylinder cover and muffler. In reassembling engine, new gaskets must be re-installed in the same locations.



MUFFLER SIDE OF ENGINE
FIGURE 26

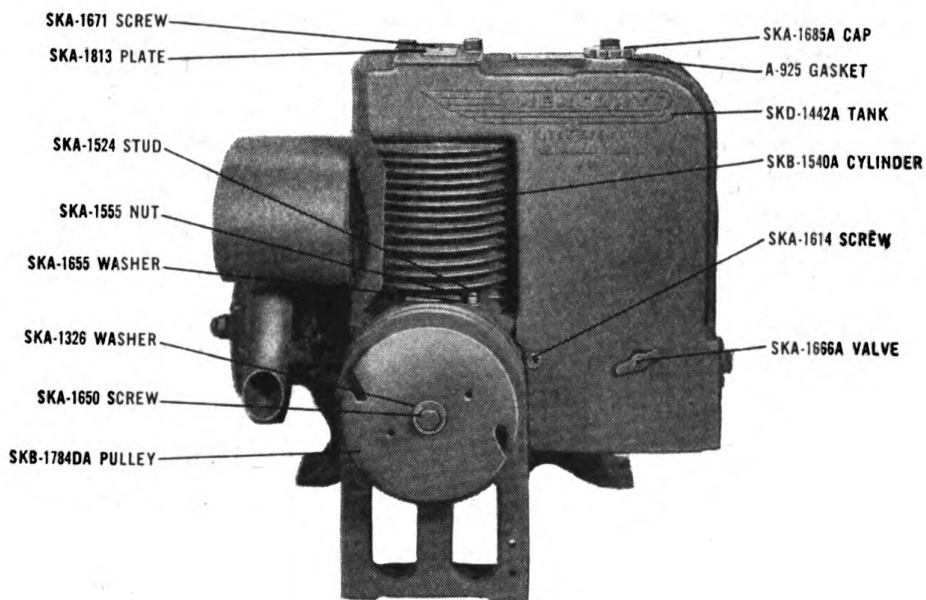


**FAN SIDE OF ENGINE
FIGURE 27**

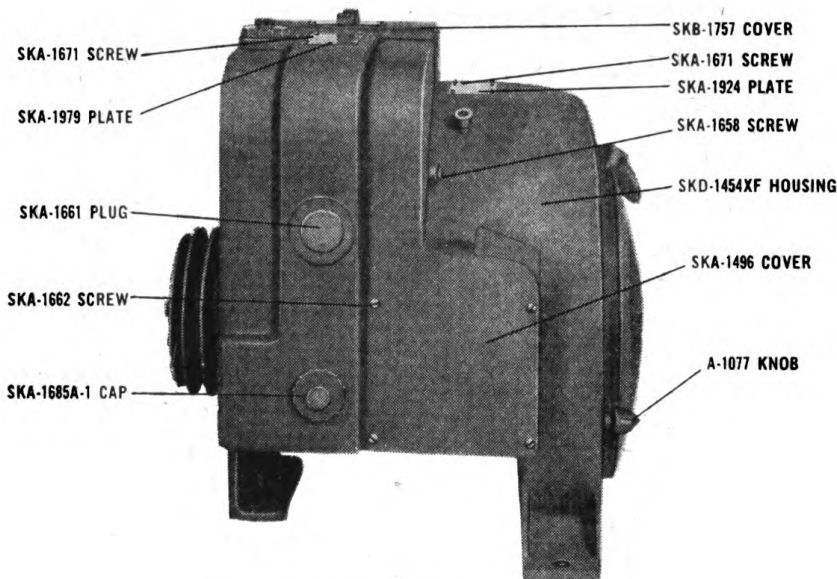
3. **Disconnect spark plug wires.** First remove spark plug cover (SKB-1757) from top of fuel tank and disconnect spark plug wires (SKA-1601A) from spark plugs. Then remove magneto cover (SKA-1496) which is secured to fan housing and to fuel tank with four screws (SKA-1662) and pull spark plug wires out of magneto end cap. Do not remove spark plug wires from fuel tank unless they require replacement.

4. **Remove fuel tank.** First close shut-off valve (SKA-1666A). Then disconnect fuel line (SKA-1663A) from shut-off valve (SKA-1666A) and from carburetor connection (SKA-1638). Next remove the two fuel tank-to-cylinder screws (SKA-1658), the fuel tank-to-crankcase screw (SKA-1614) and the fan housing-to-fuel tank screw (SKA-1658). Fuel tank is then free to be removed.

5. **Remove fan and hub assembly.** First remove fan screen (SKC-1542) by prying it off of fan housing with screwdriver. Then pull fan and hub assembly from crankshaft taper with fan puller (SKA-1788) as follows: Remove fan hub nut (SKA-1651) with a $\frac{5}{8}$ " socket wrench. Thread puller into center of fan hub and draw it up tight. Strike end of puller sharply with a small hammer. Retighten puller and strike again. Repeat this procedure until hub is free. Only light hammer blows are required; heavy blows are likely to result in damage to crankshaft or to crankshaft ball bearings. Note that fan hub is keyed to crankshaft (key number SKA-1643).



PULLEY SIDE OF ENGINE
FIGURE 28



**FUEL TANK SIDE OF ENGINE
FIGURE 29**

6. **Remove fan housing.** Disconnect shorting switch wire (SKA-1606A) from fan housing. Remove the two governor-to-fan housing screws (SKA-1581) and the two hexagon head cap screws (SKA-1659) with lock washers (SKA-1660) which secure fan housing to crankcase. Also unscrew choke knob (A-1077). Fan housing is then free to be removed.

Choke rod spring (SKA-1627) should also be removed at this time so that it will not be lost.

7. **Remove drive pulley (SKB-1784 DA).** First remove crankshaft endscrew (SKA-1650) and washer (SKA-1326). Drive pulley can then be pulled from crankshaft as follows: Insert puller abutment pad (SKA-1732) into end of crankshaft and mount puller bar (SKA-1694) with two $\frac{1}{4}$ "-20x2" long cap screws (SKA-1733), threaded into holes provided for that purpose in pulley face. Draw cap screws down snug. Then thread the $\frac{3}{8}$ "-16x3" long square head puller screw into center of puller bar and draw it down until pulley comes off of shaft. Note that pulley is keyed to shaft (key number SKA-1558).

8. **Remove mounting foot (SKC-1817).** This requires removal of the three bolts (SKA-1896), plain washers (SKA-1655) and nuts (SKA-1555) which secure mounting foot and bearing housing to crankcase.

9. **Remove cylinders.** First remove spark plugs with spark plug wrench (SKA-1689). Then remove nut (SKA-1555) and plain washer (SKA-1655) from each of the eight cylinder studs (SKA-1524). Lift each cylinder free of studs and slide it carefully off of piston.

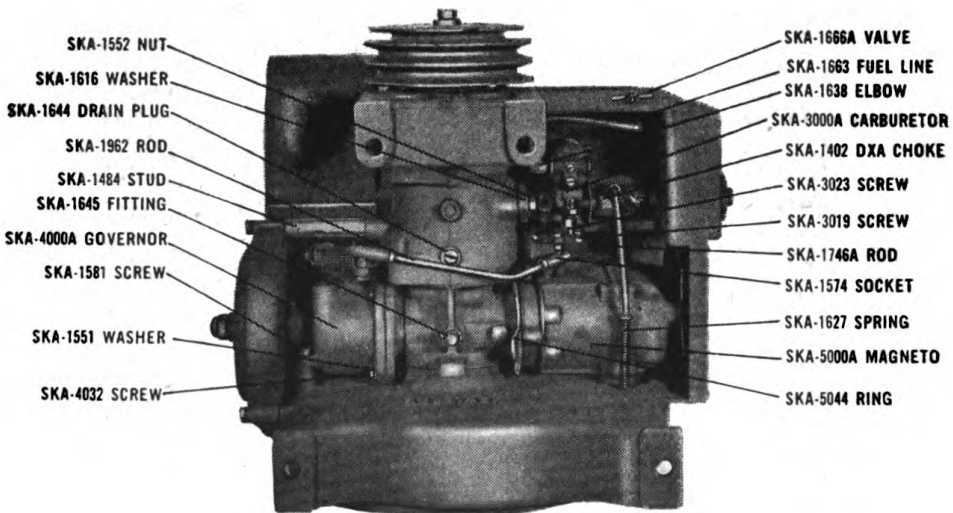
10. **Remove pistons (SKB-1510).** Piston pin (SKA-1468) is secured in piston by means of spring-wire lock rings (SKA-1473) which fit into grooves in piston pin bosses, one at each end of pin. Remove lock rings with pliers. Pin can now be pushed out. Note: It may be necessary to tap pin out of piston. If so, hold piston in such a manner that there will be no possibility of bending connecting rod.

11. **Remove connecting rods.** Before removing rods, note that both, rod and cap, have a punch mark on one side. These punch marks were applied when rods and caps were machined, and cap must always be assembled to rod so punch marks are on same side; also, each cap must remain with rod from which it was removed. If caps are turned around or interchanged, bearing race halves will not match as required.

Remove connecting rod screws (SKA-1653) from one rod and remove rod from crankshaft (SKC-1414A). Rod cap and bearing rollers (SKA-1654) will then be free to fall into crankcase. Be sure cap and all 28 rollers are recovered before proceeding with removal of second rod. Reassemble cap to rod and wrap the 28 rollers in paper. Then remove second rod and proceed in the same manner. Be sure to keep each set of 28 rollers with the rod from which they were removed.

12. **Remove carburetor (SKA-3000A) and choke assembly (SKA-1402 DXA).** Disconnect choke rod (SKA-1746A) from choke shaft lever by pulling out cotter pin (SKA-1571) at end of rod. Next remove the two carburetor stud nuts (SKA-1552) and lock washers (SKA-1616). Disconnect governor-to-throttle control rod (SKA-1962) from carburetor throttle lever. Carburetor and choke assembly are then free to be removed.

13. **Remove magneto.** Cut lock wire (SKA-1754) and pull it out of magneto support sleeve screw heads. Then remove support sleeve screws (SKA-1615) and plain washers (SKA-2023). Magneto, with drive assembly remaining assembled on it, can then be pulled out of crankcase.



**BOTTOM OF ENGINE
FIGURE 30**

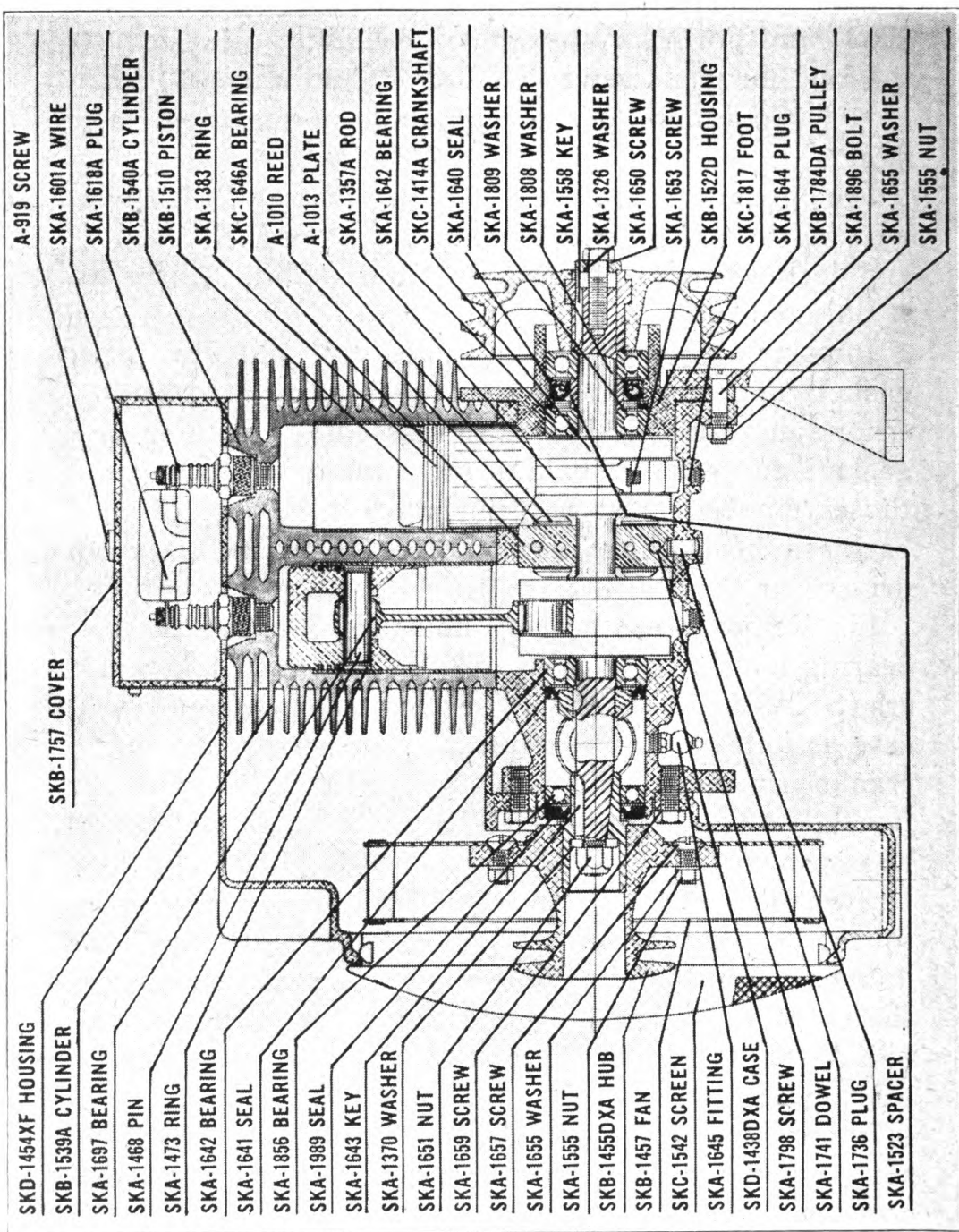
14. **Remove governor.** First remove starter ratchet (SKA-1316) from governor shaft (right hand thread). Then disconnect governor-to-throttle control rod (SKA-1962) and governor spring (SKA-4027). Next remove the four housing screws (SKA-4032) and washers (SKA-1551). Governor housing can then be separated from flange.

Free governor flange assembly from crankcase by removing the two governor mounting screws (SKA-1581) and lock washers (SKA-1947) and pulling flange assembly out of crankcase.

Important: Note combination of .005" and .015" paper gaskets and .010" steel shims assembled between governor flange and crankcase. In reassembling engine, new gaskets and shims equalling the **same total thickness** of those removed must be reinstalled to restore original backlash between accessory drive gear and governor drive gear.

15. **Remove rear bearing housing.** Remove the two bearing housing stud nuts (SKA-1555) and plain washers (SKA-1655). Then pull bearing housing from crankcase as follows: Insert puller abutment pad into end of crankshaft and mount puller bar (SKA-1694) with the two $\frac{1}{4}$ "-20x3 $\frac{1}{2}$ " cap screws (SKA-1815) threaded into holes provided for that purpose in bearing housing flange. Draw cap screws down snug. Thread the $\frac{3}{8}$ "-16x3" long square head puller screw into center of puller and turn it down to draw bearing housing out of crankcase. Crankshaft rear ball bearings (SKA-1642), bearing spacer (SKA-1523) and oil seal (SKA-1640) will come out with bearing housing.

Important: Note combination of .005" and .015" gaskets assembled between bearing housing flange and crankcase. These gaskets were fitted in original assembly to correctly adjust position of accessory drive gear in relation to governor drive gear and magneto drive gear. In reassembling engine, new gaskets equalling the **same total thickness** of those removed must be reinstalled to restore original setting.



CROSS SECTION OF ENGINE
FIGURE 31

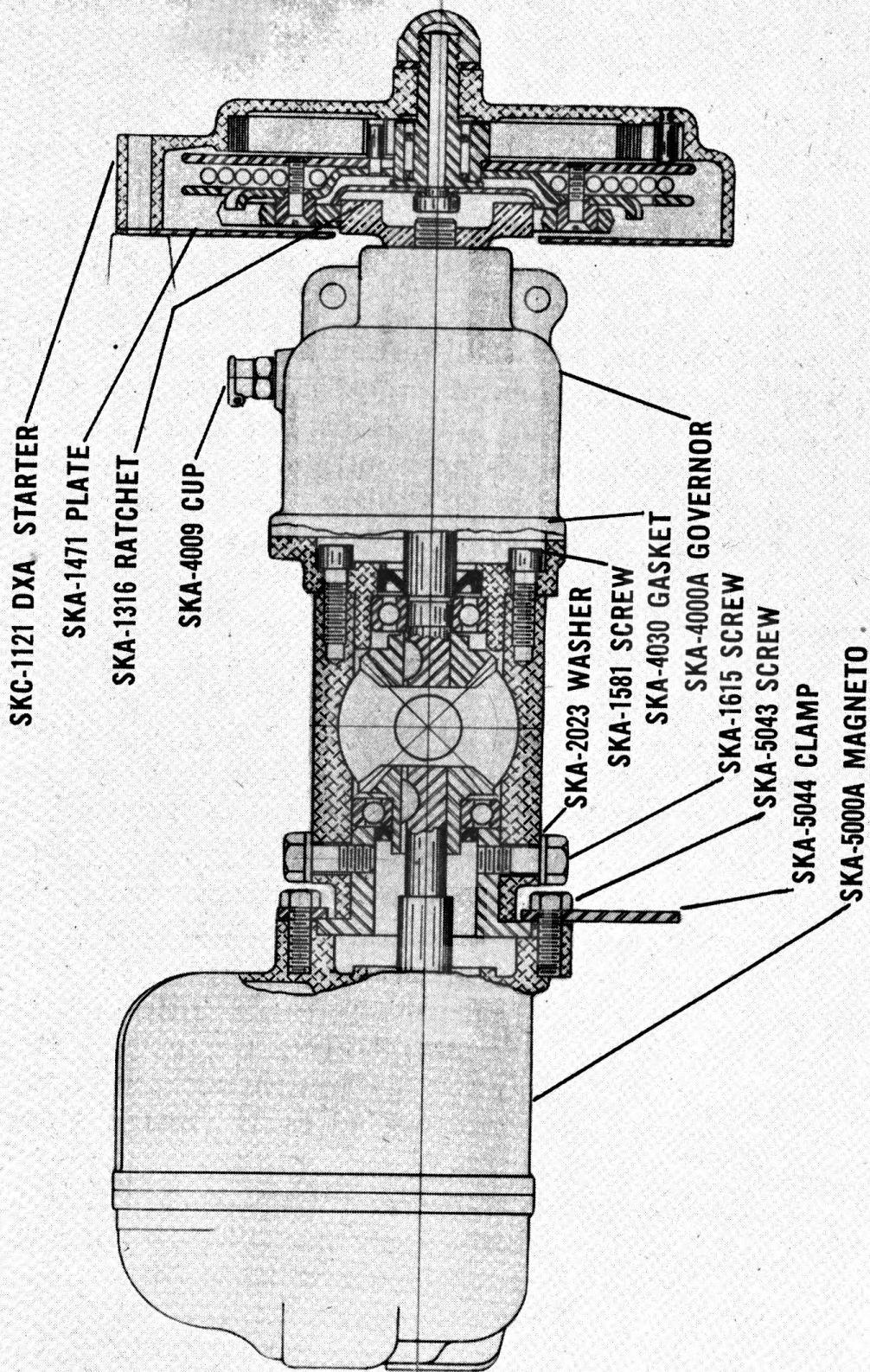


FIGURE 32

16. Remove crankshaft. First remove welch plug (SKA-1736) from bottom of crankcase, between the two drain plugs (SKA-1644). Center main bearing locating dowel (SKA-1741) is then accessible for removal. Dowel pin is internally threaded and can be removed by using a long #10-32 screw with nut and plain washer as a puller. With dowel pin removed, crankshaft and center main bearing can be pressed out of open end of crankcase.

Caution: To prevent distortion of crankshaft while pressing it out of crankcase, crankshaft cheeks should be blocked apart by means of two short bolts with nuts, set between counterweights, near outer edge. Back nuts off just enough to hold bolts in place. To prevent center main bearing from cocking while it is being pushed out by crankshaft, be sure crankshaft is turned so crank cheek contacts **all three** of the center main bearing push pins—one at each corner of counterweight and one at crank pin.

Note: If either the crankshaft or center main bearing require replacement the complete assembly SKC-1414A must be renewed as these two parts cannot be furnished separately.

17. Remove center main bearing from crankshaft. First loosen the four intake valve reeds (A-1010) and rockers (A-1013) which are secured to center main bearing by four hexagon head cap screws (SKA-1649). Then loosen the two center main bearing clamping screws (SKA-1798) until only two or three threads remain engaged, and separate the two halves by tapping screw heads. Then remove screws.

18. Miscellaneous crankcase fittings, such as grease fitting (SKA-1645), carburetor studs (SKA-1810), bearing housing studs (SKA-1160), cylinder studs (SKA-1524), crankcase drain plugs (SKA-1644) and starter support stud (SKA-1484) need not be removed unless they require replacement.

INSPECTION OF PARTS

Clean all parts thoroughly and inspect for wear and damage. Scrape carbon from cylinder combustion chambers and exhaust ports; also from exhaust manifold. Be careful about scratching or nicking joint faces, as deep scratches or nicks may result in leakage.

Clean outside of cylinders to remove dirt, dust, etc., especially from between cooling fins. Blow off loosened dust, dirt, etc., with compressed air and wipe cylinder bores with a clean rag.

Carefully clean carbon from piston. If a tool for cleaning ring grooves is not available, sharpen end of a piece of broken ring to a chisel edge. Avoid damaging or scratching sides of ring grooves.

Inspect both sets of connecting rod bearing rollers. If any rollers are found with damaged or pitted surfaces or if any rollers from a set have been lost, entire set of 28 rollers must be replaced with new ones; **never renew individual rollers.**

Ball bearings, worn to the extent of having appreciable play or shake, should be renewed.

Do not renew any oil seals except in the case of a seal which was known to be defective before engine was disassembled or which was damaged during disassembly.

Inspect fan for loose, broken or missing blades.

Bent or damaged intake valve reeds must be replaced; reeds must lie perfectly flat on a smooth, plane surface.

Inspect spark plug wires. If insulation is damaged, cracked or deteriorated, install new wires.

CLEANING CARBON FROM EXHAUST PORTS

At intervals not exceeding 64 hours of operation, also when engine performance becomes sluggish, remove muffler and inspect exhaust ports for excessive carbon accumulation. Engine cannot give maximum performance if exhaust ports are obstructed with carbon deposits.

In removing carbon from exhaust ports, care must be taken to prevent carbon from getting into cylinder. Therefore proceed as follows: Remove cylinder cover and exhaust manifold. Block engine up on one side so exhaust ports face downward at an angle. Also, as carbon is being scraped from each port, be sure piston is in position so lower edge of deflector crown is flush with lower edge of port holes. In this way, loosened carbon will fall out of exhaust port instead of becoming trapped in cylinder. Also scrape carbon from exhaust manifold.

In reassembling exhaust manifold, cylinder cover and muffler to engine, use new exhaust manifold gaskets (SKA-1920); also, be sure cylinder cover screws and muffler stud nuts are tightened securely.

REASSEMBLING ENGINE

1. **Install center main bearing.*** Extraordinary care and accuracy are required in this procedure, especially in mounting and positioning intake valve reeds (A-1010) and rocker plates (A-1013). Intake valve reeds must lie perfectly flat against main bearing faces and reeds may not be nicked or bent. If engine is assembled with damaged or bent reeds, or if reeds are not accurately positioned to cover inlet passage openings, engine performance will not be normal and perhaps engine will not even start. Never attempt to make a reed lie flat by bending it with fingers; use a new reed.

Proceed with assembly as follows: First fit the two bearing halves together and secure with clamp screws (SKA-1798). Then mount the four reeds and rocker plates with reed screws (SKA-1649). Do not tighten reed screws as yet. Carefully position the lower set of reeds so they register accurately over inlet passage openings, and center rocker plates over reeds. Lock lower reeds in this position by tightening reed screws securely. Position upper set of reeds over their inlet passage openings and tighten reed screws just snug. Then separate bearing halves to permit installing them on crankshaft.

*See note on page 76.

Apply engine oil to main bearing journal of crankshaft and set bearing halves in place in correct position so recess for locating dowel will be toward bottom of crankcase when carburetor inlet opening is toward carburetor side of crankcase. Re-install bearing clamp screws and tighten securely.

Next shift upper set of reeds as necessary so they match inlet passage openings, the same as was done in positioning lower reeds. Then tighten reed screws securely.

Double check position of each reed, after reed screws have been tightened, by carefully lifting it and observing whether it covers edge of inlet passage opening all the way around; if it does not, loosen reed screw slightly, readjust reed and rocker plate position and retighten reed screws.

Action of reed valves can be checked by alternately blowing and sucking on carburetor inlet passage opening of center main bearing. If reeds are seating satisfactorily, very little or no air can be sucked through bearing in this manner. If test shows excessive leakage of air past reeds, inspect each reed carefully and observe that it lies flat against main bearing face and that it is accurately positioned. Do not proceed with assembly until satisfactory seating of intake valve reeds has been attained.

2. Install crankshaft (with center main bearing assembly) in crankcase. When pressing crankshaft and center main bearing into crankcase, the following precautions must be observed:

First, crankshaft cheeks must be blocked apart by means of two short bolts with nuts, inserted between counterweights, directly opposite crankpins. Back nuts up just enough to hold bolts in place. This is necessary to prevent distortion of crankshaft when pressure is applied.

Second, center main bearing must be started into crankcase with recess for locating dowel directly downward, so it will register with hole in bottom of crankcase when bearing is in place.

Third, crankshaft must be turned to correct position so crankshaft cheek contacts all three of the center main bearing push pins, one at each corner of counterweight and the third at crankpin. If this is not done, bearing will cock as crankshaft bears against it.

Fourth, crankshaft must be pressed into case just far enough so carburetor inlet opening of center main bearing is centered in carburetor inlet opening of crankcase. After crankshaft is in place, install locating dowel (SKA-1741) and welch plug (SKA-1736).

3. Install rear bearing housing. If the two ball bearings (SKA-1642), bearing spacer (SKA-1523) and oil seal (SKA-1640) were removed from bearing housing, these parts should be re-installed in housing first.

Important: Correct alignment of accessory drive gear with governor drive gear and magneto drive gear will depend on fitting correct combination of .005" and .015" paper gaskets between crankcase and bearing housing flange. The correct combination was pre-determined in original assembly and correct gear alignment can be restored by re-installing bearing housing with new gaskets of **same total thickness found in disassembly.**

Set gaskets in place, start housing onto studs and press housing into crankcase. Install stud nuts (SKA-1555) with plain washers (SKA-1655); also temporarily install a bolt and nut in bottom hole of bearing housing. Tighten bolt and stud nuts securely, as bearing housing must be drawn tight before magneto drive gear backlash can be accurately checked (Step 5).

4. **Install magneto.** Magneto drive gear and accessory drive gear must mesh in correct relative position so points "break" each time front or rear crankpin reaches 23° before top center. This can be done as follows: Rotate crankshaft in direction which engine normally runs to position where front crankpin is at top dead center; then back it up 20° (one tooth on accessory drive gear). Next, remove magneto end cap, distributor rotor and rotor pin. Turn rotor shaft in direction which it normally runs to position where breaker points **just start** to separate. Without turning crankshaft or magneto rotor shaft from positions just set, hold magneto in its normal installed position (vertical) and insert drive end of magneto into crankcase. Install magneto support sleeve screws (SKA-1615) with plain washers (SKA-2023), but do not tighten securely until backlash adjustment has been made.

5. **Adjust magneto drive gear backlash.** When checking magneto drive gear backlash, it is important that rear main bearing be fully seated against shoulder in bearing housing. This can be assured by tapping on rear (pulley) end of crankshaft with a rawhide mallet just before check is made. Correct adjustment of magneto drive gear backlash can be determined by "feel." If magneto drive gear is too tightly or too loosely meshed with accessory drive gear, "grating" of gear teeth can be felt as rotor shaft is turned. A $5/32''$ round rod, inserted through hole in end of rotor shaft, will permit turning rotor shaft by hand. (Bend rod as necessary to clear magneto parts.) By tapping magneto inward and outward to various positions, a point can be found where engagement of gear teeth is smoothest; magneto should be locked in this position by tightening the two support sleeve screws. In tightening these screws, draw them up alternately, each a little at a time, until both are tight; if first one is tightened fully and

then the other, magneto will cock in its mounting, and drive gears will not mesh properly.

After support sleeve screws have been securely tightened, insert a lock wire (SKA-1754) through holes in screw heads, draw the wire tight and secure by twisting the ends together. Distributor rotor and magneto end-cap may be left off until engine has been completely assembled and ignition timing has been accurately adjusted according to timing marks on fan and fan housing.

6. **Install governor.** Governor drive gear must mesh with accessory drive gear with sufficient clearance so it has between .003" and .006" backlash. Backlash is adjusted in original assembly by fitting correct combination of .005" and .015" paper and .010" steel shims between governor flange (SKA-4015DA) and crankcase. Correct backlash can be restored in reassembly by installing governor flange with new gaskets and shims of **same total thickness found in disassembly**. Be sure to assemble a paper gasket on each side of the steel shim. Secure governor flange to crankcase with two screws (SKA-1581) and lock washers (SKA-1947). Tighten screws securely. Next install governor housing assembly (SKC-4000DA-1) on governor flange with four screws (SKA-4032) and plain washers (SKA-1551). Use a new gasket (SKA-4030) between housing and flange. When installing starter ratchet (SKA-1316) on end of governor shaft, be sure thrust washer (SKA-1595) is in place behind ratchet. Install governor spring (SKA-4027).

7. **Install carburetor and choke assembly.** Use a new gasket (A-427) between carburetor and crankcase. Mount carburetor (with choke assembly attached) on studs (SKA-1810) and secure with lock washers (SKA-1616) and stud nuts (SKA-1552). Tighten stud nuts securely. If rubber sealing ring (SKA-1159) is not in good condition, renew.

8. **Install connecting rods.** If old rollers were found in good condition and are to be used again, be careful to assemble each set of 28 rollers to the same rod from which they were removed when engine was disassembled. If one or more rollers from a set require replacement, entire set should be discarded and a complete new set of 28 rollers installed; **never renew individual rollers.**

To assemble connecting rods and bearings to crankshaft, proceed as follows: Lay out the set of 28 rollers which are to be assembled with first rod. Apply a coat of heavy grease to rod and rod cap bearing surfaces. Set 14 rollers into rod and 14 into cap. The grease will serve to hold rollers in place during assembly.

A tool for assembling rod and cap to crankshaft can easily be made from a piece of $\frac{1}{4}$ " round rod about 7" long, having a $\frac{1}{4}$ "-28 thread on one end. Insert tool, through hole in rod and thread it into cap. Rod and cap can then be easily set into position on crankshaft and held in place while one of the socket screws is installed and drawn down (but not tightened). Tool may then be safely removed and the other socket screw can be installed. Use **new** socket screws if available.

Important: Bear in mind that rod and cap are originally machined as a unit and must always be assembled as originally paired, and with punch marks on same side as explained in Step 11, under "Disassembling Engine," Page 71. (For the sake of uniformity, it is recommended that rods always be installed with punch marks **toward governor side of engine.**)

Draw socket screws down alternately, each a little at a time, until both are tight. These screws must be drawn **very tight**, therefore do not use a wrench with rounded corners; grind end of wrench off as necessary to remove worn portion. After screws are tight, apply engine oil to connecting rod bearing (between rod sides and crank cheeks), rotate crankshaft a few turns and check rod for binding or sticking. Rod must turn freely enough so that

when it is held straight up and released, it will fall to either side by reason of its own weight. Also, upper end of rod should have at least .005" side shake. Sticking or binding are usually due to rod and cap becoming misaligned in tightening socket screws.

9. **Install pistons.** First apply engine oil to connecting rod upper bearings. Then install pistons **with concave side of deflector crown toward carburetor side of engine.** While tapping piston pin into piston, hold piston firmly so connecting rod will not become bent. After pin is in place, carefully clean lock ring grooves and install lock rings (SKA-1473). **Caution:** Be sure each lock ring seats firmly in groove; if it does not, discard and install a new one. A lock ring loosely installed will loosen further in service and may finally come out of piston; if this occurs, cylinder and piston may become seriously damaged.

10. **Install cylinders.** Lubricate cylinder walls and piston rings with engine oil. Also apply engine oil generously to rod lower ends and to crankshaft at center main bearing. This will provide initial lubrication when starting engine for the first time following reassembly.

Install cylinder gaskets (SKA-1794). Rotate crankshaft so rear piston is at top dead center. Start rear cylinder onto piston and, after making sure ring gaps register on lock pin in ring grooves, carefully slide cylinder over piston and onto crankcase studs. Install stud nuts (SKA-1555) with plain washers (SKA-1655), but do not tighten securely as yet.

Install front cylinder in the same manner.

After both cylinders are installed slide exhaust manifold (SKB-1443D) onto studs; this will hold cylinders in alignment while cylinder stud nuts are being tightened. Draw cylinder base stud nuts down evenly, each a little at a time, until all are tight. Also install spark plugs at this time. If spark plug gaskets are not in good condition, renew. Start threads two or three turns with fingers to avoid cross-threading; then tighten with spark plug wrench (SKA-1689).

11. **Install mounting foot.** First remove the bolt and nut from bottom hole of rear bearing housing flange. Secure mounting foot with three bolts (SKA-1896), plain washers (SKA-1655) and nuts (SKA-1555). Tighten nuts securely.

12. **Install fan housing.** First install shorting switch and lead wire. Then secure fan housing to front end of crankcase with two cap screws (SKA-1659) and lock washers (SKA-1660). Finally install the two governor-to-fan housing screws (SKA-1581).

13. **Install drive pulley.** Set key (SKA-1558) into pulley keyway with beveled end toward engine. Start pulley onto shaft by tapping it **lightly** with a rawhide mallet. Insert crankshaft endscrew (SKA-1650) with endscrew washer (SKA-1326). Start endscrew two or three turns with fingers to be sure threads are not crossed. Then tighten securely with wrench. (35 foot-pounds.)

14. **Install fan and hub assembly.** Set key (SKA-1643) into fan hub keyway with beveled end toward engine. Start fan hub onto shaft by tapping lightly with rawhide mallet. Install the thick washer (SKA-1370) and fan hub nut (SKA-1651) on end of shaft. Tighten nut securely.

15. **Install fuel tank.** It is assumed that spark plug wires, grommets, fuel shut-off valve, etc. are in place and in good condition. Set fuel tank into position and connect fuel line to fuel shut-off valve (SKA-1666A) and to carburetor connection (SKA-1638); first start threads a few turns with fingers to avoid cross-threading. Then install the two fuel tank-to-cylinder screws (SKA-1658) and washers (SKA-1579); also the fuel tank-to-crankcase screw (SKA-1614) with plain washer (SKA-1579).

16. **Install cylinder cover and muffler.** Six new exhaust manifold gaskets (SKA-1920) are required, one pair on each side of exhaust manifold (SKB-1443D) and another pair between cylinder cover (SKB-1724) and muffler (SKC-1931). Fasten cylinder cover to fuel tank and to fan housing with eight screws (SKA-1636).

Mount muffler on studs (SKA-1903) and secure with lock washers (SKA-1947) and stud nuts (SKA-1552).

17. **Install starter assembly.** Starter assembly is fastened to starter support stud (SKA-1484) and to fan housing by three hexagon-head cap screws (SKA-1598) and plain washers (SKA-1551).

18. **Time ignition.** Readjust contact points so they have .012" to .015" maximum separation (with breaker lever riding on highest point of cam). Rotate fan to position where 1/16" timing hole in fan rim is in alignment with timing hole in front edge of fan housing. With crankshaft in this position, front piston is in firing position and circuit breaker points should be **just starting** to separate. If points open too soon, spark is advanced too far; if points open too late, spark is retarded. To adjust spark advance, turn magneto in its mounting by means of lug on friction ring; shift lug **toward** fan housing to **advance** spark, **away** from fan housing to **retard** spark.

After correct timing adjustment has been attained, mount distributor pin and disc on rotor shaft. Determine from position of contact plate on distributor disc which end cap terminal is receiving the spark; this terminal is for the **front** spark plug wire. After spark plug wires have been inserted into their respective terminal sockets, install spark plug cover (SKB-1757), magneto cover (SKA-1496) and fan screen (SKC-1542).

19. **Connect controls.** Mount spring (SKA-1627) on threaded end of choke rod (SKA-1746A), insert end of rod through hole in fan housing and install choke knob (A-1077). Connect other end of rod to choke lever and secure with cotter pin (SKA-1571).

Connect throttle control rod to governor throttle lever and to carburetor throttle lever. Secure socket fittings to levers with lock washers (SKA-1785) and nuts (SKA-1573).

SERVICING IGNITION SYSTEM

The ignition system is carefully engineered to insure quick, easy starting and maximum dependability, without the necessity of frequent adjustment and service. Field adjustment is rarely necessary, and should not be attempted, except in strict accordance with instructions.

Failure to start, hard starting or erratic performance can result from a number of causes aside from magneto itself. Therefore, before assuming that magneto is at fault, first make a systematic check to eliminate other possible causes of trouble. (The more common difficulties and suggested remedies are listed in "Troubles Encountered with Engine," Page 42.) If the trouble is then definitely traced to the ignition system, make the following checks to determine the exact nature of the trouble:

1. **Inspect spark plugs.** Defective spark plugs may cause missing, hard starting and lack of normal power. Spark plugs must be clean and gap between electrodes adjusted to .040". If plugs are found with cracked, broken or blistered insulation, or with badly oxidized electrodes, replace with new plugs. Proceed with Step 2.

2. **Test spark at spark plugs.** Remove spark plug cover (SKB-1757) and take off the spark plug terminal nuts, leaving high tension wires connected. Start engine, warm it up thoroughly and set choke in fully-opened position. With engine running, hold high tension wires 1/16" away from spark plug terminals. If this causes engine to miss, indicating a weak or intermittent spark, proceed with Step 3.

3. **Test spark at magneto.** Remove magneto cover plate (SKA-1496) from fan housing. Pull high tension wires out of their sockets in the end cap and insert a short, stiff wire in each socket. Bend end of each wire to within 1/4" of some part of engine. Operate starter at normal "cranking" speed and observe spark between each wire and engine. A "hot" bright spark indicates that magneto is functioning normally and that the trouble is some-

where outside of magneto. A weak reddish spark (or no spark at all, as in the case of an engine that will not start) indicates that the trouble is within the magneto. In either case, proceed with Step 4.

4. Inspect high tension wires and terminals. Carefully inspect for cracked or damaged insulation, particularly at grommets, where wires pass through fuel tank casting. The insulation may have become deteriorated or cracked, allowing high tension current to "leak" to metal parts with which wires come in contact. In this case, install new high tension wires before proceeding to Step 5.

5. Remove magneto end cap (SKA-5020). This requires removing the four screws (SKA-5022), lock washers (SKA-5024) and plain washers (SKA-5023).

Carefully clean joint face of magneto and end cap so when magneto is again assembled, cover will form a dust and moisture tight seal. If gasket is not in good condition, replace with a new one. In final assembly (but not before) gasket should be coated with gasket-sealing varnish.

Check magneto rotor shaft for excessive looseness in breaker plate bushing. If bushing is worn to the extent that shaft has noticeable looseness, install new breaker plate with bushing already installed (SKA-5007). This requires removing condenser (SKA-5047), felt wick (SKA-5051) and circuit breaker points (SKA-5032A). Breaker plate is secured to magneto frame by four screws (SKA-5017). Bushing is prelubricated and does not require periodic lubrication after magneto is placed in service.

If felt wick (SKA-5051) is dry or hard, it should be replaced with a new factory-impregnated wick.

Wipe inside of end cap with a clean, dry cloth to remove any possible accumulation of carbon, dust, oil film or moisture. Clean contact bar on distributor rotor (SKA-5026) and high tension wire terminals in end cap

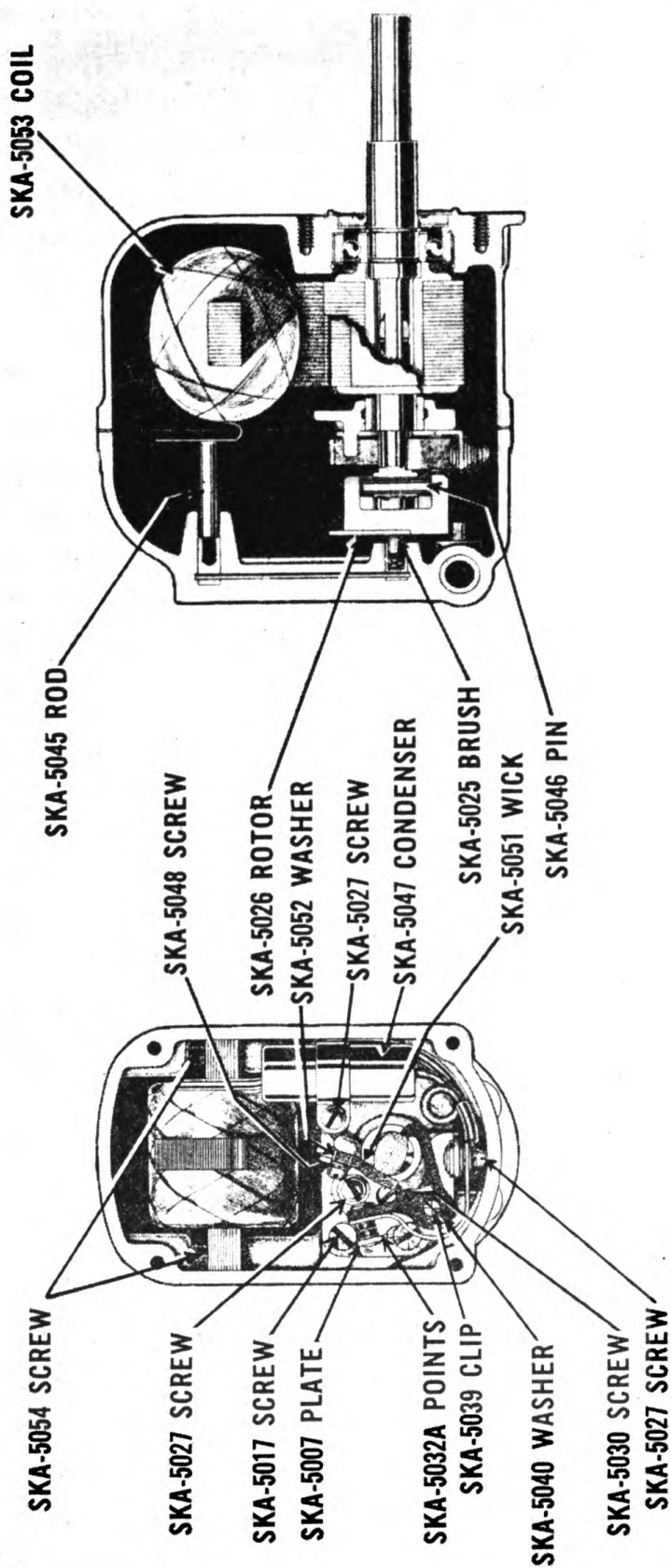


FIGURE 33

with fine sandpaper. If coil lead brush (SKA-5025) is badly worn, replace with a new one.

Do not attempt to remove magnetic rotor (SKA-5010) from frame; this should be done only by a factory-trained service man.

Before reassembling magneto, proceed through Step 6.

6. Inspect circuit breaker points. Oxidized or slightly pitted points may be refaced; badly pitted or pyramided points should be renewed.

Whenever points have been refaced or a new set of points has been installed, point gap should be reset and ignition timing reset as explained under "Time Ignition," Page 86.

Reassemble magneto and repeat spark test described in Step 3. If magneto still shows a weak spark or no spark at all, again remove end cap and gasket and proceed to Step 7.

7. Install new condenser. Condenser is secured by a mounting screw (SKA-5027) and lead wire terminal screw (SKA-5027) on contact point plate. When condenser is installed, be sure wires are again connected properly and screws are tightened securely.

Again test spark as described in Step 3. If spark is still not satisfactory proceed to Step 8.

8. Install new coil (SKA-5053). Disconnect the three wires from lead wire terminal on contact point plate and remove condenser. Also remove the two coil set screws (SKA-5054). Coil is then free to be removed. Note that coil core has two indentations; install new coil with these indentations **upward** to receive ends of coil set screws. Tighten set screws securely and fill screw head recesses in top of frame with sealing wax. Re-install condenser. Be sure wires are again properly connected to lead wire terminal on contact point plate. Re-install end cap and gasket and repeat spark test described in Step 3.

9. If magneto requires general overhaul or replacement of parts other than described in the foregoing paragraphs, it is recommended that complete magneto be removed from engine (See Step 13, under "Disassembling Engine," Page 72) and sent to the magneto manufacturer for the necessary repairs.

SERVICING STARTER ASSEMBLY

To Disassemble:

1. **Free Starter assembly from engine** by removing the three hexagon head cap screws (SKA-1598) and plain washers (SKA-1551) which secure starter housing (SKC-1121DXA) to fan housing (SKD-1454XF) and to starter support stud (SKA-1484). Starter friction plate (SKA-1471) is then also free.

2. **Remove starter pawl assemblies (SKA-1407A).** With friction plate removed, pawl assemblies can be lifted off of pivot studs.

3. **Caution:** In completing the following disassembly operations, bear in mind that starter spring (A-1049) is coiled in housing with considerable tension and, unless these instructions are carefully followed, there is danger of injury due to the force with which spring uncoils when released suddenly.

4. **Remove starter rope handle (SKB-1372) and handle bushing (SKA-1772).** In assembly, starter sheave is wound counter-clockwise two or three turns to give starter spring the necessary initial tension. Therefore, when handle is removed, hold sheave and allow it to unwind slowly.

5. **Remove sheave shaft (SKA-1950A).** After removing lock nut (SKA-1597), lock washer (SKA-1882) and outer thrust washer (SKA-1595), sheave shaft can be tapped out of starter housing with a small hammer. While doing so, hold housing and sheave together firmly; this precaution will prevent starter spring from disengaging one or both of the spring anchor pins.

6. **Separate sheave from housing.** Carefully lift sheave—just enough to permit inserting thumb under sheave, and hold starter spring in place. While pressing spring into housing, lift sheave free of spring. Spring may then be safely uncoiled by lifting out one coil at a time, always holding the remaining coils firmly in place with thumb.

Note inner thrust washer (SKA-1595) assembled in starter housing recess, between housing and sheave.

7. **Remove starter rope from sheave.** This requires removing the six sheave re-inforcing screws (SKA-1678) and the two pawl anchor pivot screws (SKA-1594). These screws should be discarded, because **new** ones must be used in reassembly. Starter rope can now be pulled out through hole in sheave flange.

To Reassemble:

1. **Inspect parts** and if any are found worn or damaged, replace with new parts.

2. **Install starter rope.** Insert end of rope, through hole in sheave flange, engage rope anchor block in notches provided for that purpose and wind rope in sheave **one** full turn. Then install the six sheave reinforcing screws (SKA-1678) and the two pawl pivot stud screws (SKA-1594). Tighten screws securely and wind remainder of rope around outside of screws. To prevent screws from loosening in service, stake screw ends at several points with a center punch.

3. **Install starter spring (A-1049).** First insert a snug-fitting rod through sheave shaft hole in center of starter housing and clamp rod in vise so inner side of housing faces upward. To keep housing from turning while coiling spring, insert a $\frac{1}{4}$ " x 3"-long screw (part number SKA-1815 will serve) through one of the mounting screw holes in housing and allow screw to bear against vise.

Note that hooks at each end of spring are of different length. Spring must be installed with **long** hook engaged on anchor pin in starter housing.

Caution: In coiling spring, care must be taken to keep coiled portion fully seated in housing. Hold coils constantly in place with one hand while inserting the next coil with the other hand. If this precaution is relaxed for only an instant, spring may snap out of housing and uncoil with sufficient force to cause severe injury. This danger exists until sheave and shaft have been installed.

Engage spring hook on anchor pin in housing, with looped-over end toward center of housing. Coil the spring counter-clockwise. After spring has been completely coiled, carefully apply a generous amount of grease, forcing it between spring coils.

Housing, with spring in place, may now be removed from vise. Take out the rod and bolt.

4. **Install starter sheave.** First set inner thrust washer (SKA-1595) into recess in center of starter housing. Then carefully lift inner end of spring out of housing, just enough to permit engaging spring anchor pin of starter sheave in spring hook. (Bear in mind the danger of spring snapping out of housing.) When spring hook is engaged on anchor pin, sheave may be set into place in housing.

Set sheave shaft key (SKA-1911) into shaft keyway and, while holding sheave so center bearing is in alignment with shaft hole in starter housing, insert sheave shaft and tap it into place. Be sure slot in pawl retainer engages pin on sheave. Install outer thrust washer (SKA-1595), lock washer (SKA-1882) and lock nut (SKA-1597) one end of sheave shaft and tighten nut securely.

5. **Install starter handle and bushing.** Grasp end of starter rope, wind starter sheave counter-clockwise at least two full turns and insert end of rope through rope

guide. To keep rope from drawing back out of rope guide, temporarily tie a knot. This procedure winds spring to give sheave the necessary initial tension. Insert end of rope through rope handle and through handle bushing and tie a double knot in extreme end of rope to secure it in handle.

Pull starter rope to test spring tension; if tension is not sufficient to draw handle back against rope guide, it will be necessary to again remove rope handle and increase initial spring tension by winding sheave an extra turn.

6. Install starter pawl assemblies. Mount starter pawls on pivot studs with magnets facing **away** from sheave flange and with hooked ends of pawls toward pawl retainer. Friction plate (SKA-1471) is assembled against magnets.

7. Re-install starter assembly on engine with cap screws (SKA-1598) and plain washers (SKA-1551). Tighten screws securely.

MAINTENANCE OF COMPRESSOR

Discharge Valve: To remove the discharge valve assembly for cleaning or replacement the following procedure should be followed:

1. Unscrew hexagon cap #1555.
2. Unscrew threaded sleeve #3008. This sleeve can be removed by using a wrench in the slots. See Figure 34.
3. The discharge valve assembly can now be lifted from the pocket in the cylinder head.

It is possible to disassemble, but under field conditions it is best to replace the complete discharge valve assembly #3284 in cases where any part may be broken or damaged. A spare is carried in the first echelon parts packed in the chest. Where more time and tools are available, the valve can be dismantled as follows:

The complete assembly is pressed together, and in order to dismantle it, it is necessary to place the assembly in a vise, gripping on valve seat #1919 and turning valve bumper #3010 until loosened. This will allow the valve disc #1552 and the spring #1368 to be removed.

Before reassembling the valve, all parts should be cleaned and inspected.

1. Spring #1368 should be examined carefully to make sure that it has tension enough to snap the valve disc back on its seat quickly.
2. Valve disc #1552 should be examined carefully to make sure it is not warped or pitted. If damaged it should be replaced. Do not attempt to grind valves or seats.

3. Valve seat #1919. Check to be sure that it is not cracked or the seat pitted.
4. Gasket #1554, be sure it is not cracked or broken and when assembling be sure it is placed in its proper position.

Suction Valve: To remove the suction valve assembly #3283 for cleaning or replacement the following procedure should be followed:

1. Unscrew hexagon cap #1555.
2. Unscrew threaded sleeve #3008. This sleeve can be removed by using a wrench in the slot. See Figure 34.
3. The component parts can now be lifted from the pocket piece by piece.

If the suction valve to be removed has the V.D. unloader or the connection to it the following operation must be done before the sleeve can be removed.

1. Loosen and remove nut #2700 to free tubing #3233.
2. Loosen and remove the nuts on fitting #1642 and remove tubing #2870.
3. Remove unloader body cap #3212 by unscrewing.
4. The valve can now be removed by following operation 1 to 3 for the standard suction valve.



FIGURE 34

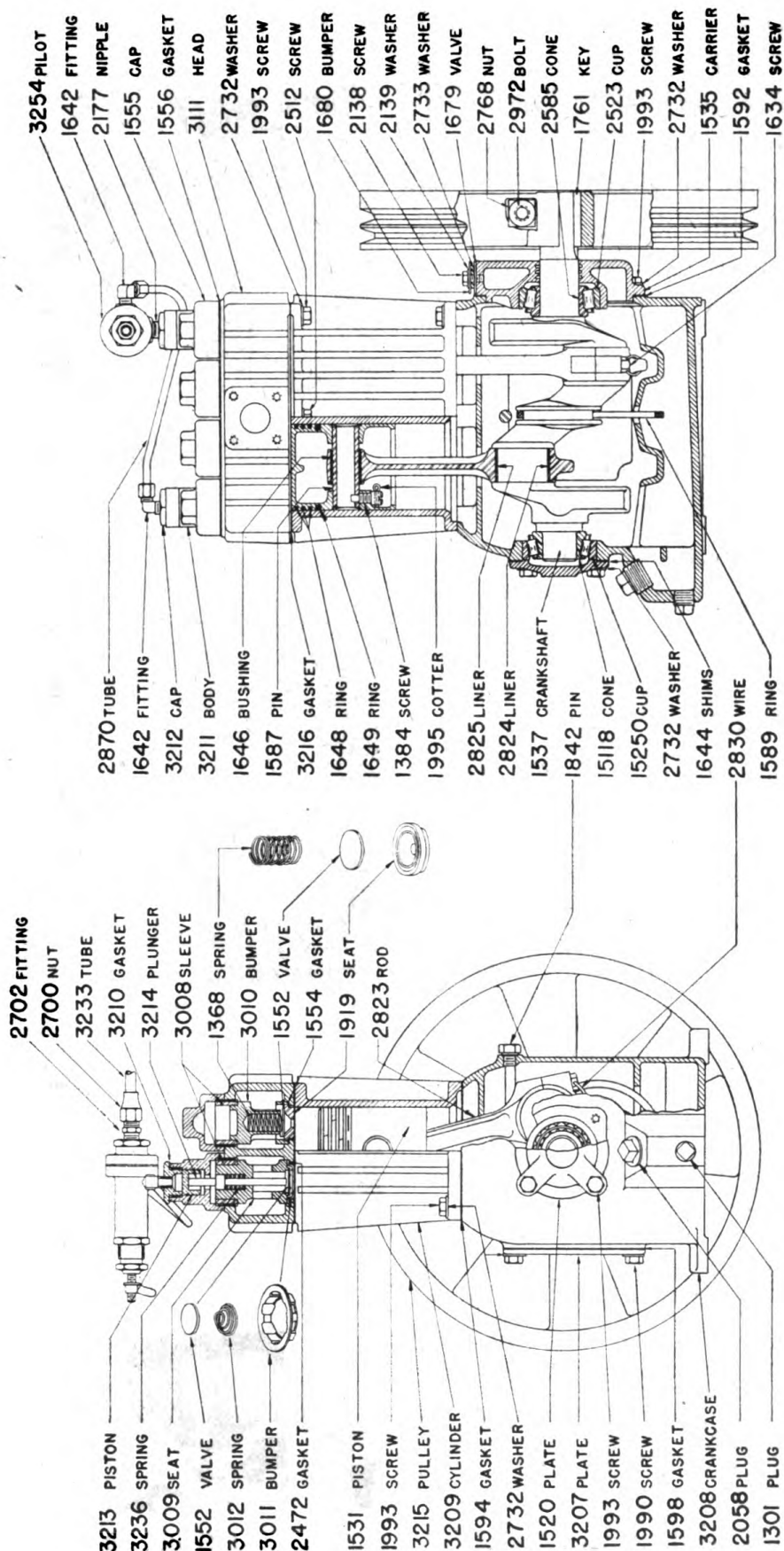


FIGURE 35

Head: To remove head #3111, first disconnect discharge tube #3221 from the cylinder head by removing the screws #2022. Next remove the six cylinder head screws. All the heads are underneath. See Figure 37. After these screws are removed, the head can be lifted from the cylinder taking care that the head gasket #3216 is not damaged.

Crankcase Handhole Plate: The handhole plate #3207 is removed by taking out the four screws #1990. Care should be taken so the gasket #1598 is not damaged.

Pistons: To remove the pistons, it is necessary to pull out the safety wire #2830 and remove the connecting rod screws #1634. See Figure 38. After the screws are removed, the bearing cap and the connecting rod liner #2824 can be dropped and the piston and rod removed from the top of the cylinder.

Each piston is equipped with three compression rings #1648 (upper) and one oil control ring #1649. The pistons are fitted to cylinder at .0015" clearance. After long operation rings should be examined and, if worn excess-

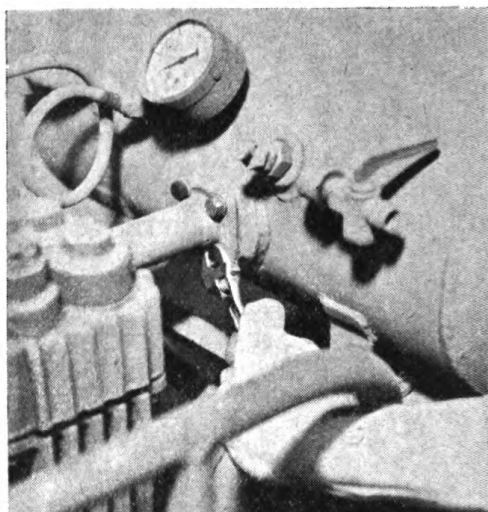


FIGURE 36

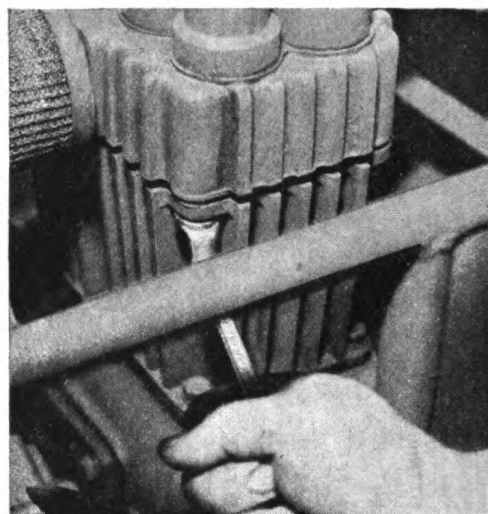


FIGURE 37

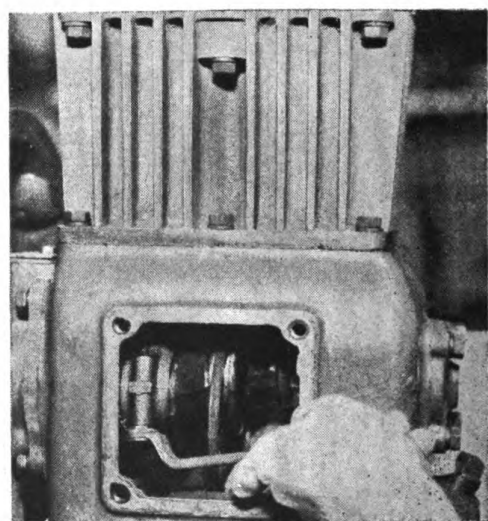


FIGURE 38

ively, replaced. Cylinder walls should be examined for wear to determine if oversize rings should be used, or if the cylinders should be rebored. If slots in oil control rings are filled with carbon, or dirty oil, they should be thoroughly cleaned before they are reinstalled.

Each connecting rod has a hard rolled bronze bushing on piston pin end, and a renewable babbitted bearing at crank pin end. Rod bearings should be replaced if worn excessively. Adjustment of rod bearings is not recommended. Connecting rods are assembled with a .0015" to .002" clearance, so that there is always a cushion of oil between bearing and shaft. No shims are used.

If the piston is to be taken from the connecting rod it is first necessary to remove the cotter pin #1995 and unscrew the piston pin set screw #1384. The piston pin #1587 can then be pressed from the piston. If the connecting rod bushing #1646 is worn and replacement necessary it should be pressed from the rod. Do not attempt to replace this bushing unless proper tools are available.

In reassembling, be sure that the rings are not broken when putting the piston back into the cylinder. Also, be sure that the bearing cap is placed on the rod so that the marking coincides.

Crankshaft and Bearings: Each end of crankshaft is provided with Timken roller main bearings, and should require no attention for a very long period of time. If any looseness should develop, remove one or more of the thin shims #1644 located under the adjustment plate opposite the flywheel end of the crankshaft. After removing one shim, replace the adjustment plate, draw up on its screws tightly, and then try turning the compressor over by hand to make sure bearings are not too tight. If the compressor does not turn over as easily as it did before the shim was removed, the adjustment will have been unnecessary, and the shim will have to be replaced.

If necessary to remove the crankshaft, continue the disassembly as follows:

1. Remove oil circulating ring retainer #1842. See Figure 39.
2. Remove four bearing carrier screws #1993.
3. Pull out flywheel and crankshaft assembly. See Figure 40.

CAUTION: Be careful not to break oil circulating ring when removing crankshaft. Be sure that this ring is in place when crankshaft is replaced.

4. If necessary to replace a bearing cup, a convenient method of removing cup from bearing carrier is shown in Figure 41. The bearing carrier is held in a vise and one man holds screwdriver while other drives against screwdriver with punch. A more satisfactory method is to use a bearing puller when this type of tool is available.

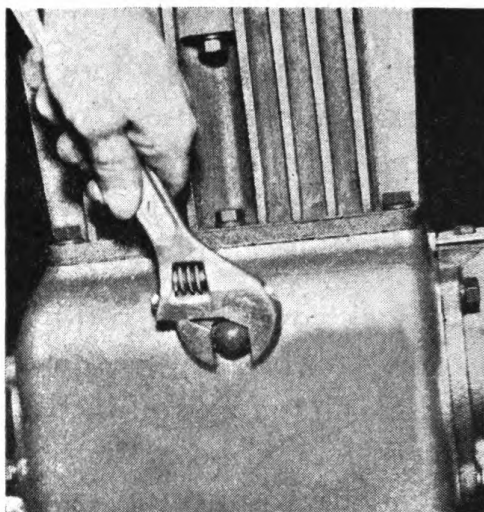


FIGURE 39

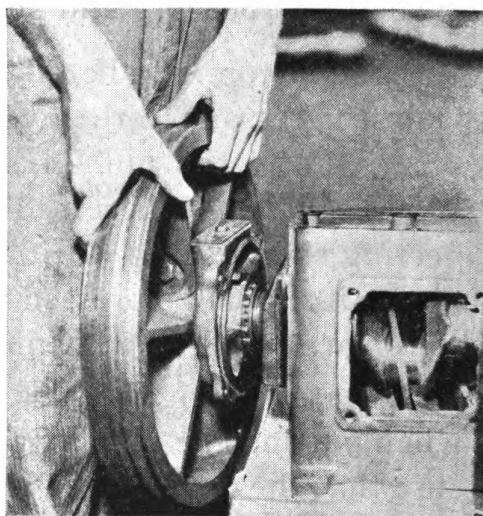


FIGURE 40

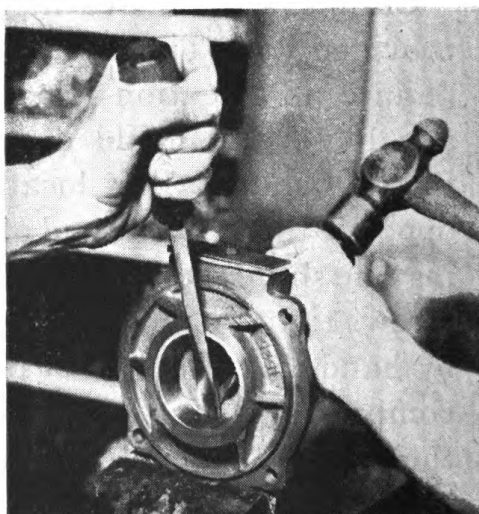
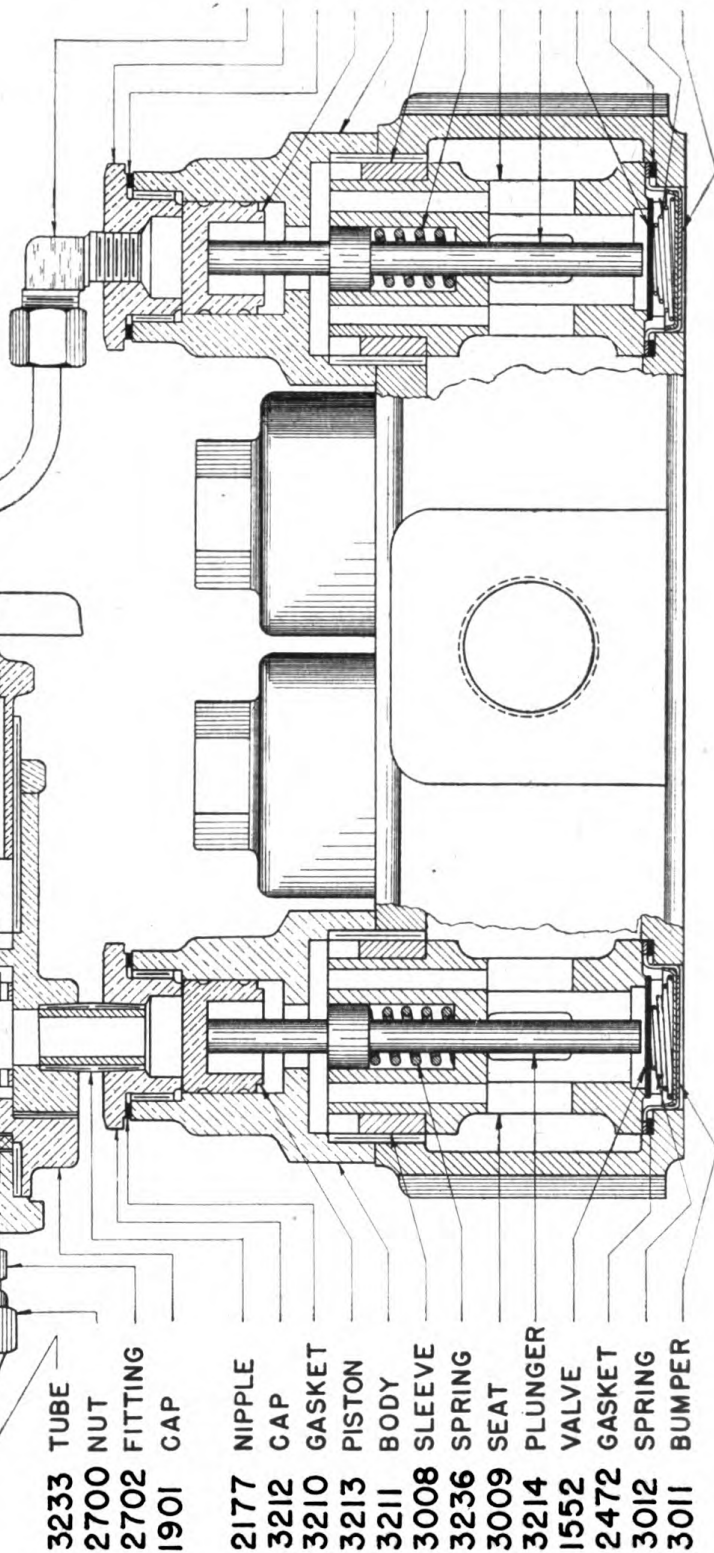


FIGURE 41

1797 SHIM
 1799 FELT
 1999 WASHER
 1112 SCREW
 1792 CAP
 1798 SCREEN
 1642 FITTING
 1897 PISTON
 2870 TUBE
 1895 BODY
 1796 NUT
 3078 SPRING
 3037 CAP
 1625 NUT
 1896 ROD



1642 FITTING
 3212 CAP
 3210 GASKET
 3213 PISTON
 3211 BODY
 3008 SLEEVE
 3236 SPRING
 3009 SEAT
 3214 PLUNGER
 1552 VALVE
 2472 GASKET
 3012 SPRING
 3011 BUMPER

"VD" UNLOADER
FIGURE 42

“VD” Pilot Unloader: VD pilot was properly set at factory for a loading pressure of 70 pounds (approx.) and unloading pressure of 80 pounds. Do not tamper with this setting unless trouble occurs. The unloading pressure is regulated by cap #3037. The differential (between unloading and loading pressure) is regulated by the number of shims #1797.

Occasionally it may be necessary to dismantle the entire pilot and clean carefully with gasoline. To remove pilot for cleaning proceed as follows:

1. Release all air pressure from receiver.
2. Disconnect tubing from Pilot.
3. Remove adjustment cap #3037, rod #1896, and spring #3078 (assembled) from pilot body.
4. Unscrew pilot body from top of valve assembly.
5. Unscrew cap #1792.
6. Remove screen #1798 and filter #1799 and clean thoroughly.
7. Unscrew #1112 screw and remove cap #1901.
8. Remove piston #1897.
9. Clean with gasoline all metal parts.

CAUTION: Remember that these parts are extremely delicate and should be handled with care.

If excessive air escapes from around rod #1896 when compressor is running **unloaded**, seat of piston #1897 on body side is leaking and requires lapping or re-placing. (Keep in mind that when compressor reloads automatically, all air trapped over inlet valves is allowed to escape to atmosphere from around rod). The piston can be re-seated by lapping to either body or cap with rouge or finest grade of compound.

If air enters VD pilot and partially or totally unloads compressor when pressure in receiver is below 70 pounds, seat of piston #1897 on cap side is leaking. The piston can be re-seated by lapping as described in preceding paragraph.

SECTION III

PARTS LIST

WARNING

SPARE PARTS can be supplied promptly and accurately only if positively identified by correct part number and correct part name.

FURNISH THIS INFORMATION ON ALL REQUISITIONS. WITHOUT FAIL, on all requisitions, give name of machine, name of manufacturer, model or size, manufacturer's serial number of each machine and subassemblies attached to machine, and components and accessories for which spare parts are required.

List spare parts for only one make or kind of machine on each requisition.

Requisitions must be double spaced to provide room for office notations when necessary.

PREPARATION OF REQUISITIONS

SAMPLE COPY FOR USE IN THE PREPARATION OF REQUISITIONS

On this page is shown a sample spare parts requisition on QMC Form No. 400 which conforms to the latest revisions. The marginal notes give instructions for preparing a requisition for spare parts for Engineer equipment.

The revised QMC Form 400 has new column headings. Until new forms are available use the present form and type or write in corrections in column headings as shown below.

Under revised heading "Nomenclature" and "Unit" list the article and the unit (ea for each; lb for pound; etc.). Under heading "Maximum or Authorized Level" list the authorized organizational allowances or depot stock levels given in ENG 7 and ENG 8 of the ASF

Engineer Supply Catalog (superseding Part III, Corps of Engineers Supply Catalog). The total number on hand for each item is listed under "On Hand". In column headed "Due In" enter the total quantity previously requisitioned but not delivered. Column headed "Required" is to be changed to read "Quantity Desired" and column headed "Approved" is to read "Remarks." For "Initial" and "Replenishment" requisitions, the sum of "Quantity Desired", "Due In", and "On Hand" should equal "Maximum or Authorized Level."

(Additional details on this subject are covered in ENG 1 of the ASF Engineer Supply Catalog which incorporates information formerly contained in Section AA-1, Part III, Engineer Supply Catalog.)

State PERIOD designation by use of one of the following terms:

- (1) "INITIAL"—first requisition of authorized allowances.
- (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
- (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.

Type "SPARE PARTS" in upper right hand corner of requisition.

Address requisitions to Engineer Field Maintenance Office, P. O. Box 1679, Columbus, Ohio (except for spare parts for searchlights and barrage balloons which are addressed to Schenectady, N. Y. or Ogden, Utah ASF depots).

Give complete shipping instructions. Special instructions for packing, marking, routing, etc., should be given at bottom of requisition.

State proper nomenclature of machine, also make, model, machine serial number and U. S. A. registration number.

Prepare a separate requisition for each different machine.

State basis or authority and date delivery is required, immediately below description of machine.

Double space between items.

Group parts required under group headings as shown in manufacturers' parts catalogs (Technical Manuals).

State OCE stock numbers, manufacturers' parts numbers and nomenclature accurately and completely. Do not use abbreviations.

(SAMPLE)
REQUISITION

WAR DEPARTMENT
Q. M. C. Form No. 400
(Revised 19 Aug. 1942)

To: Engineer Supply Officer No. of Sheets 1 Sheet No. 1
Columbus Army Service Forces Depot, COLUMBUS, OHIO
 Requisition No. E-551-2-44 Date July 8, 1943 Period Replenishment

SHIP TO: Engineer Property Officer, Pine Camp, New York
 MARKED FOR: Supply Officer, 802 Engineer Battalion, Pine Camp, N. Y.

Requisitioned By (show Signature, Rank, Organization, Destination. If different from "ship to" include address):
Robert E. Roe
 Robert E. Roe
 Major, C. E.,
 Engineer Property Officer.

Approved ~~XXX~~ For the
 Commanding Officer:
John E. Doe
 John E. Doe
 Col., C. E.
 Executive Officer.

MFG. NO.	NOMENCLATURE AND UNIT	AUTH. OF MAX. LEVEL	ON HAND	DUE IN	REQUIRED	APPROVED
	<u>SPRAYER, PAINT, PNEUMATIC, PORTABLE, WITH COMPRESSOR, GASOLINE ENGINE-DRIVEN, WHEELBARROW-TYPE, WITH TWO 5-GAL. GALVANIZED STEEL TANKS AND ACCESSORIES, BINKS, MODEL E-2. ENGINE: KIEKAEFER, MODEL KB6F.</u>					
	Basis: To complete second echelon set.					
	Delivery is requested by July 20, 1943					
	<u>BINKS MODEL 17A GUN</u>					
T-901	NOZZLE, Material- 66SS ea.	1	0	0	1	
L-158	PACKING, Air Valve ea.	2	0	1	1	
	<u>KIEKAEFER ENGINE MODEL; KB6F</u>					
SKA-1794	GASKET, Cylinder ea.	1	0	0	1	
SKC-1931	MUFFLER ea.	1	0	0	1	
	<u>QUINCY COMPRESSOR, MODEL 216</u>					
1522	VALVE ea.	4	0	0	4	
3012	SPRING, Valve Suction ea.	4	2	0	2	
	<u>COMMON SUPPLIES</u>					
A-558	PLUG, 1/4 Tapered Pipe ea.	2	1	0	1	

U. S. GOVERNMENT PRINTING OFFICE 16-38221-1

*Nonexpendable items such as tools must be accounted for, when requisitioned, by a statement that they have been placed on REPORT OF SURVEY or STATEMENT OF CHARGES.

Emergency requisitions sent by telephone, teletype, cablegram, telegraph or radio must be confirmed immediately with requisition marked: "Confirming (state identifying data)."

PREPARATION OF REQUISITIONS

A Sample requisition in the correct form for submission by the Engineer Property Officer is shown on the opposite page.

THIS SHALL BE FOLLOWED IN MAKING OUT REQUISITIONS

In order to eliminate duplication of work, Property Officers may authorize organizations to prepare requisitions in final form, leaving requisition number space blank for completion by Property Officer.

THE FOLLOWING RULES WILL BE OBSERVED CARE- FULLY IN PREPARING REQUISITIONS FOR SPARE PARTS

- a. Prepare a separate requisition for each different machine.
- b. Type "SPARE PARTS" in upper right hand corner of requisition form.
- c. State PERIOD designation by use of one of the following terms:
 - (1) "INITIAL"—first requisition of authorized allowances.
 - (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 - (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.
- d. Give complete shipping instructions.
- e. State proper nomenclature of machine, and make, model, serial number and registration number.
- f. State basis or authority, and date delivery is required, immediately below description of machine.
- g. Group parts required under group headings as shown in manufacturers' parts catalogs.
- h. State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.
- i. Double space between items.
- j. Emergency requisitions sent by telephone, telegraph, or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."
- k. Nonexpendable items must be accounted for.

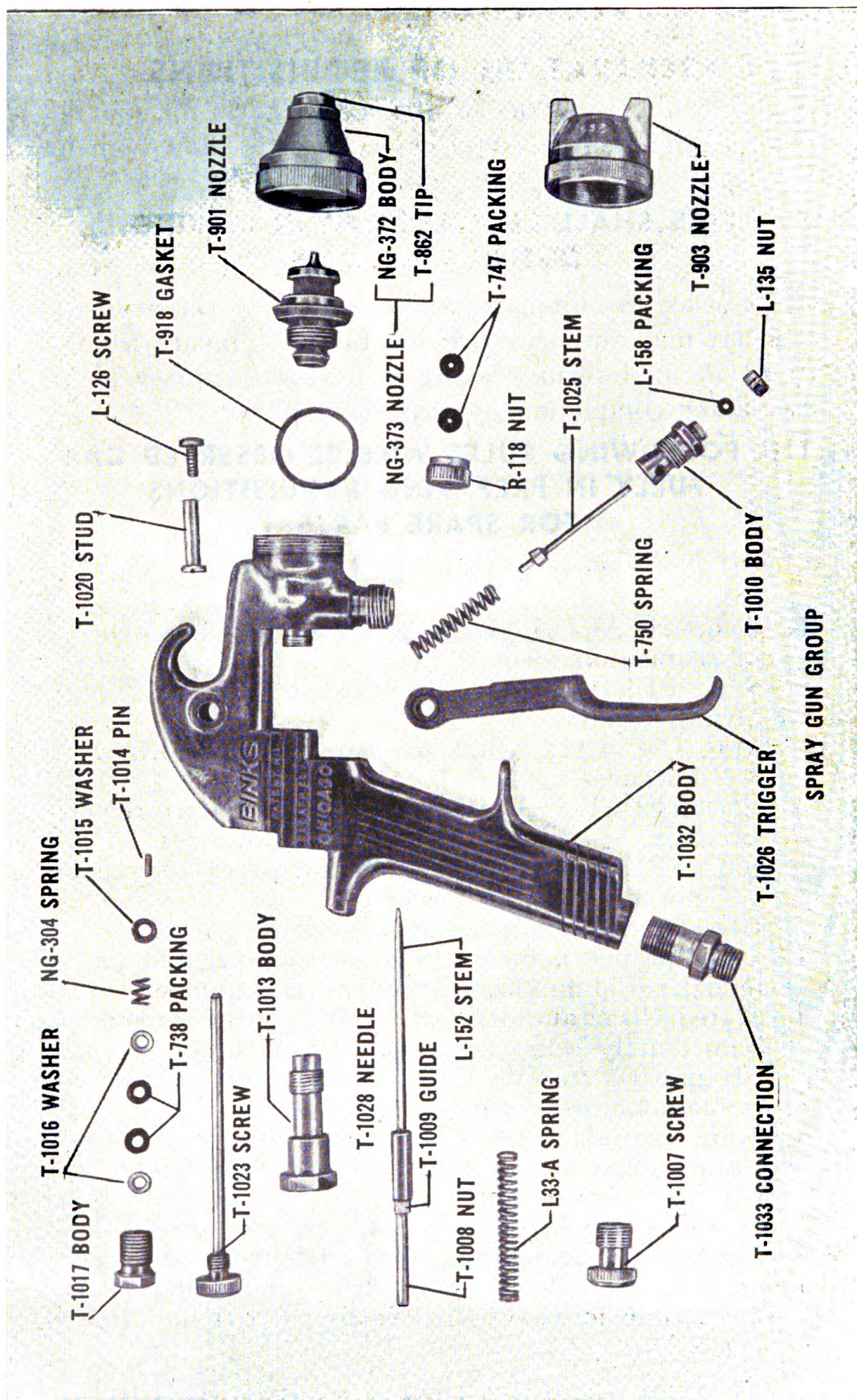


FIGURE 43

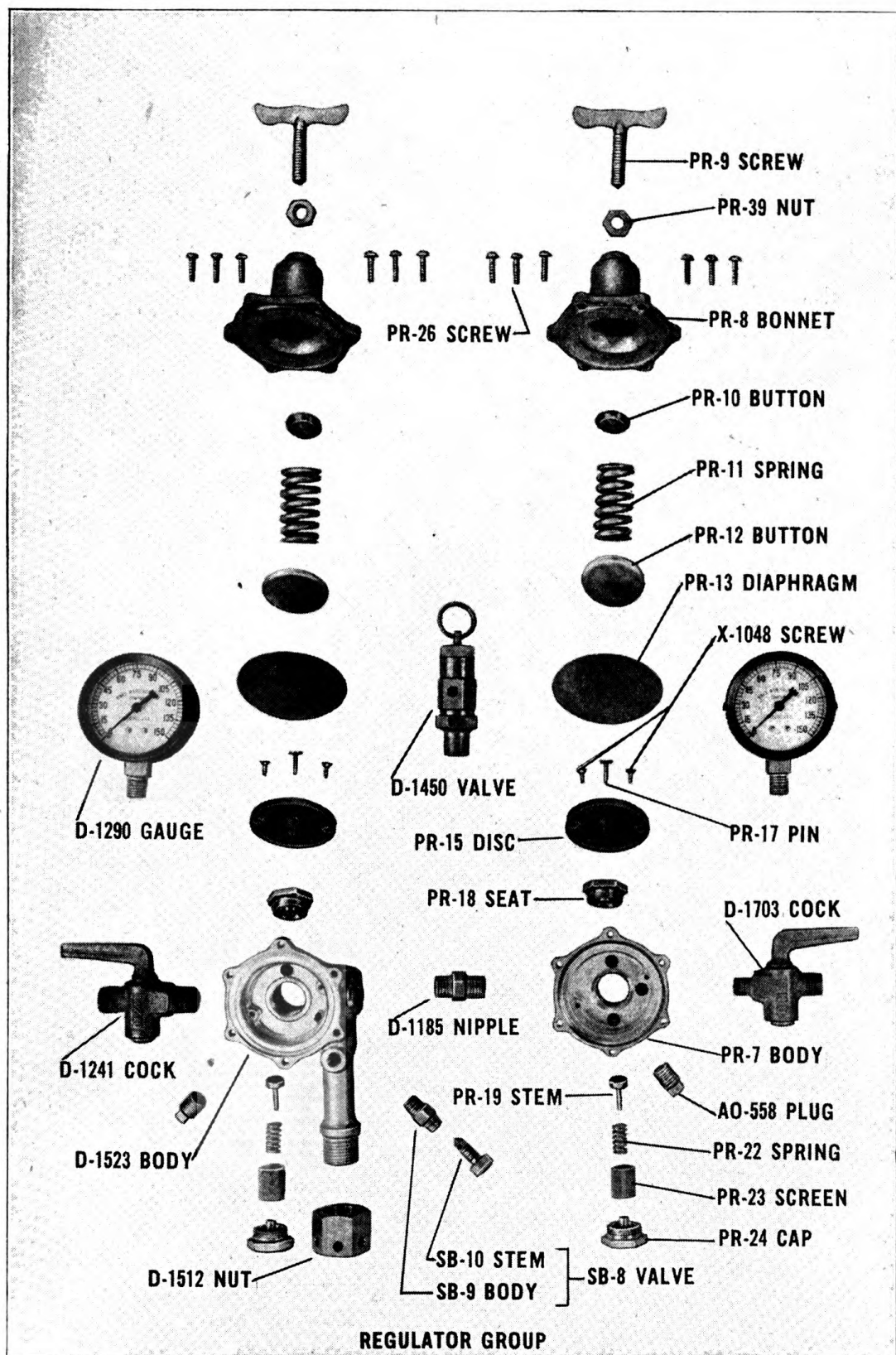


FIGURE 44

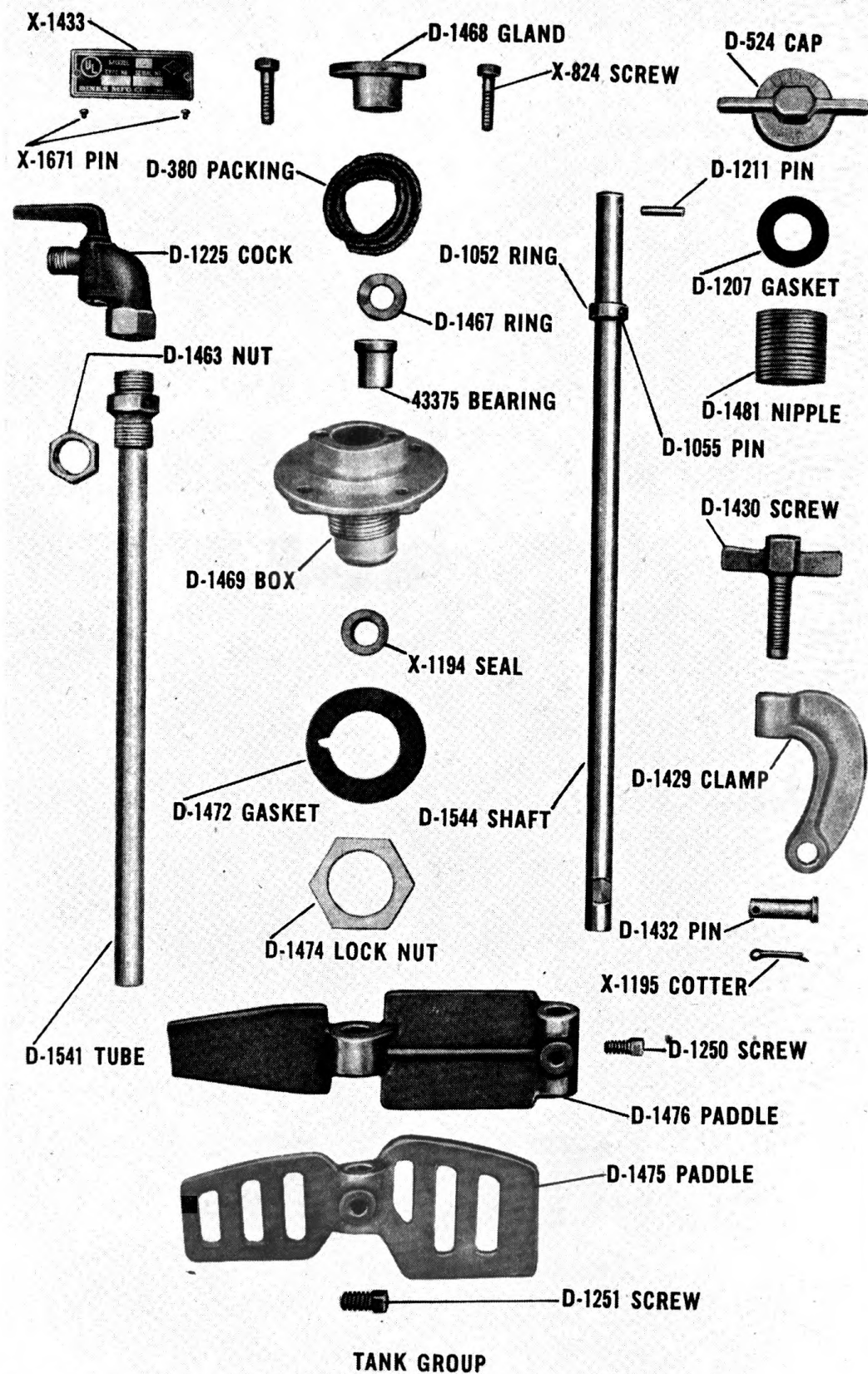


FIGURE 45

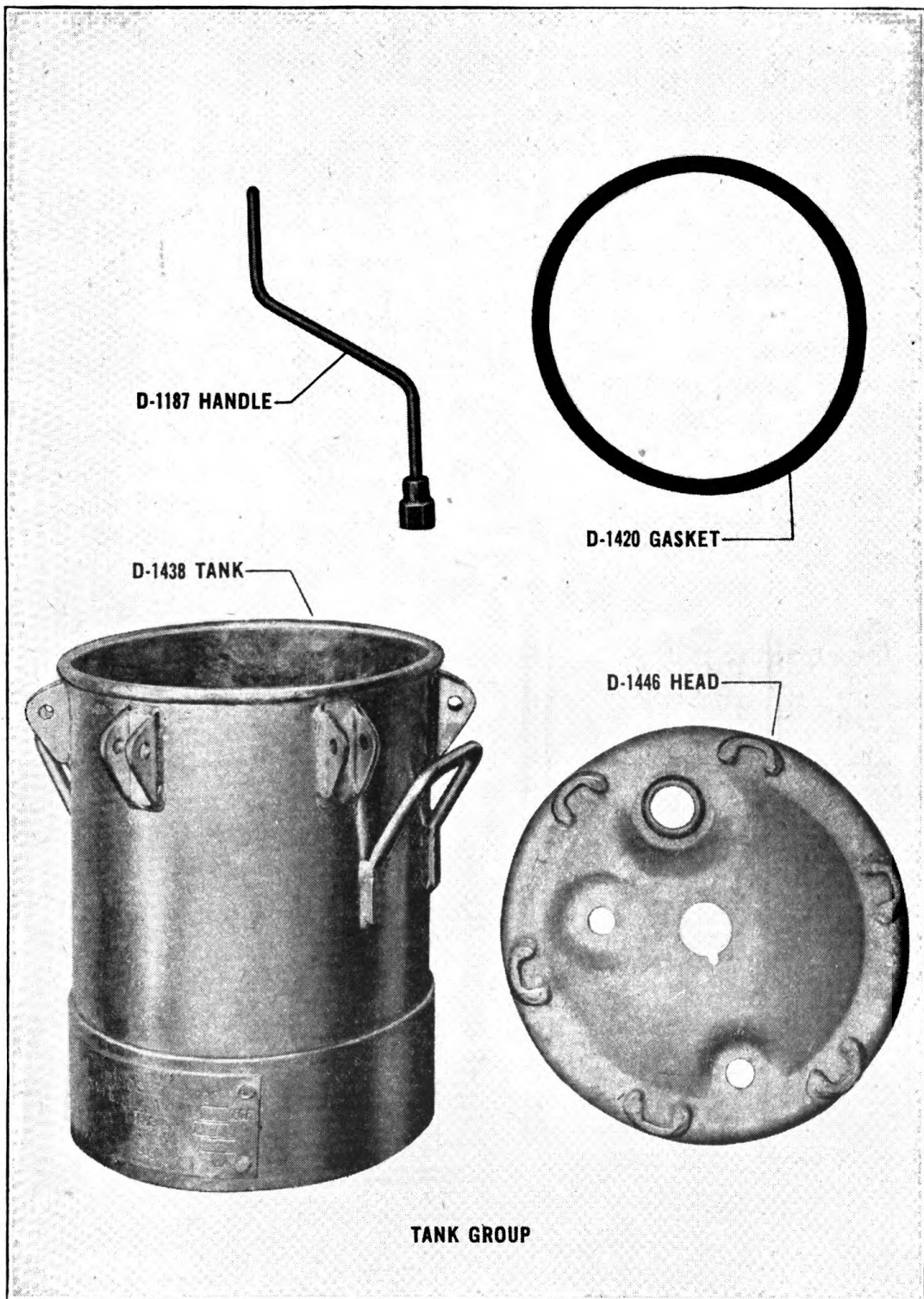
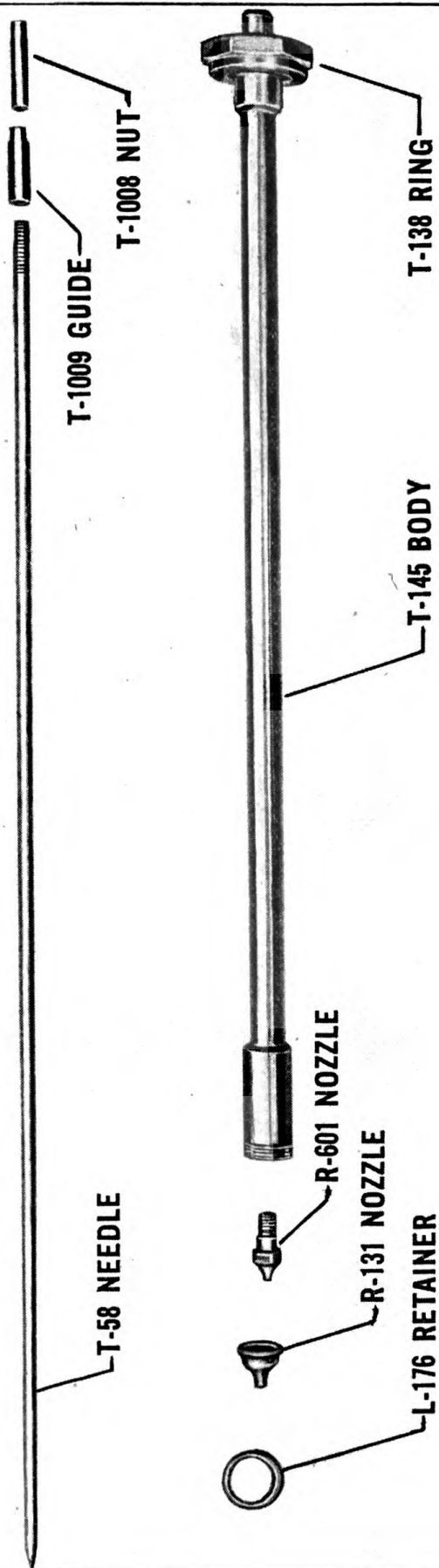


FIGURE 46



EXTENSION GROUP

FIGURE 47

D-1710 MATERIAL LINE STRAINER

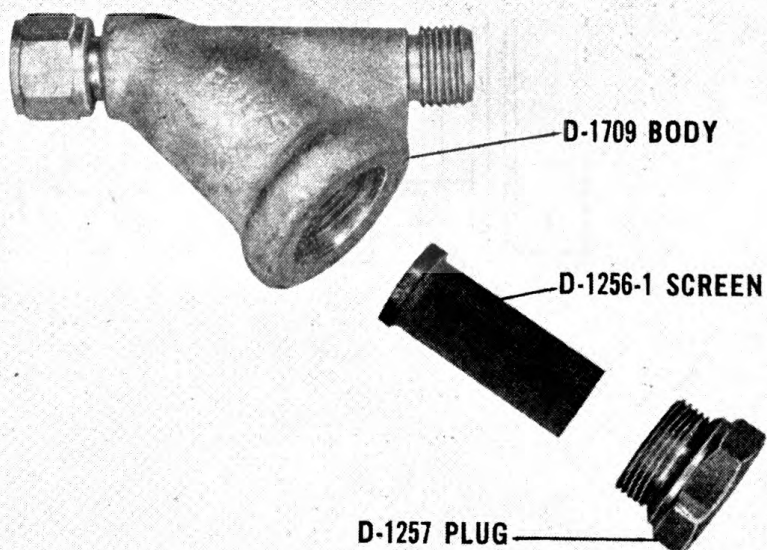


FIGURE 48

D-1711 AIR LINE FILTER

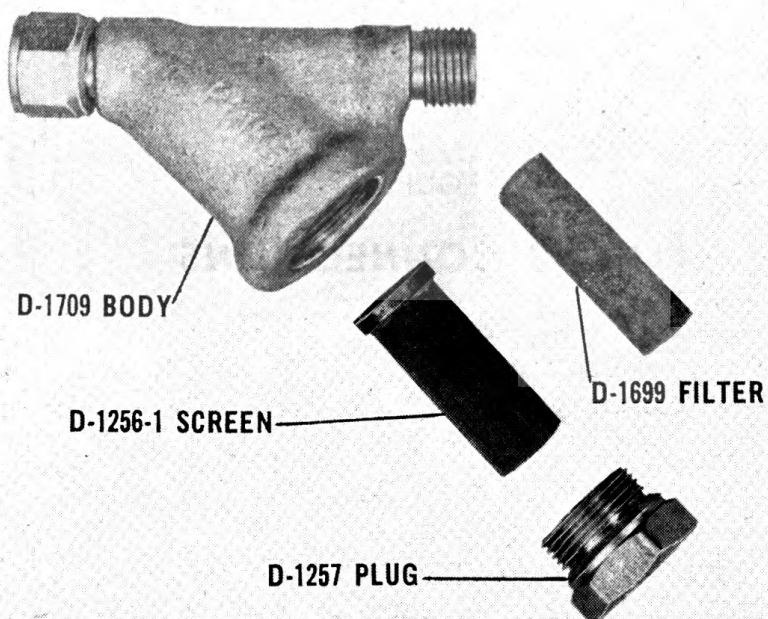


FIGURE 49

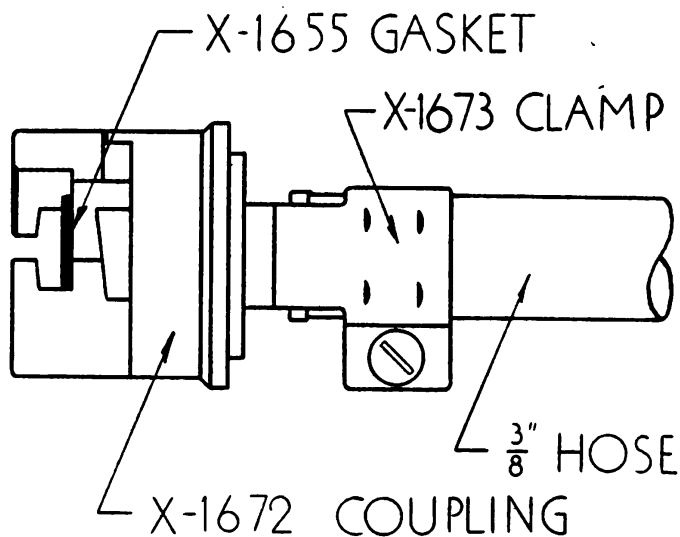


FIGURE 50

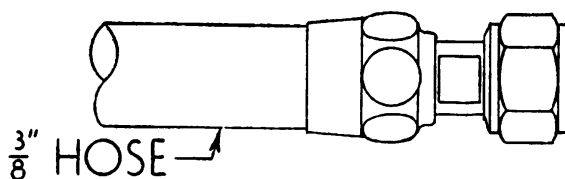


FIGURE 51

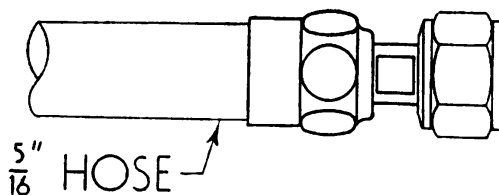


FIGURE 52

HOSE CONNECTIONS

<i>Part No.</i>	<i>Description</i>	<i>Quantity</i>
SC-264	Connection, $\frac{5}{16}$ " Hose, Complete	4
SC-265	Connection, $\frac{3}{8}$ " Hose, Complete	8
X-1655	Gasket, Coupling	4
X-1672	Coupling, Hose End Only	4
X-1673	Clamp, Hose	4
44104	Hose, $\frac{3}{8}$ Air, 50 feet long, with Couplings	4
44105	Hose, $\frac{5}{16}$ Air, 30 feet long, with Couplings	2
44106	Hose, $\frac{3}{8}$ Material, 30 feet long, with Coup.	2

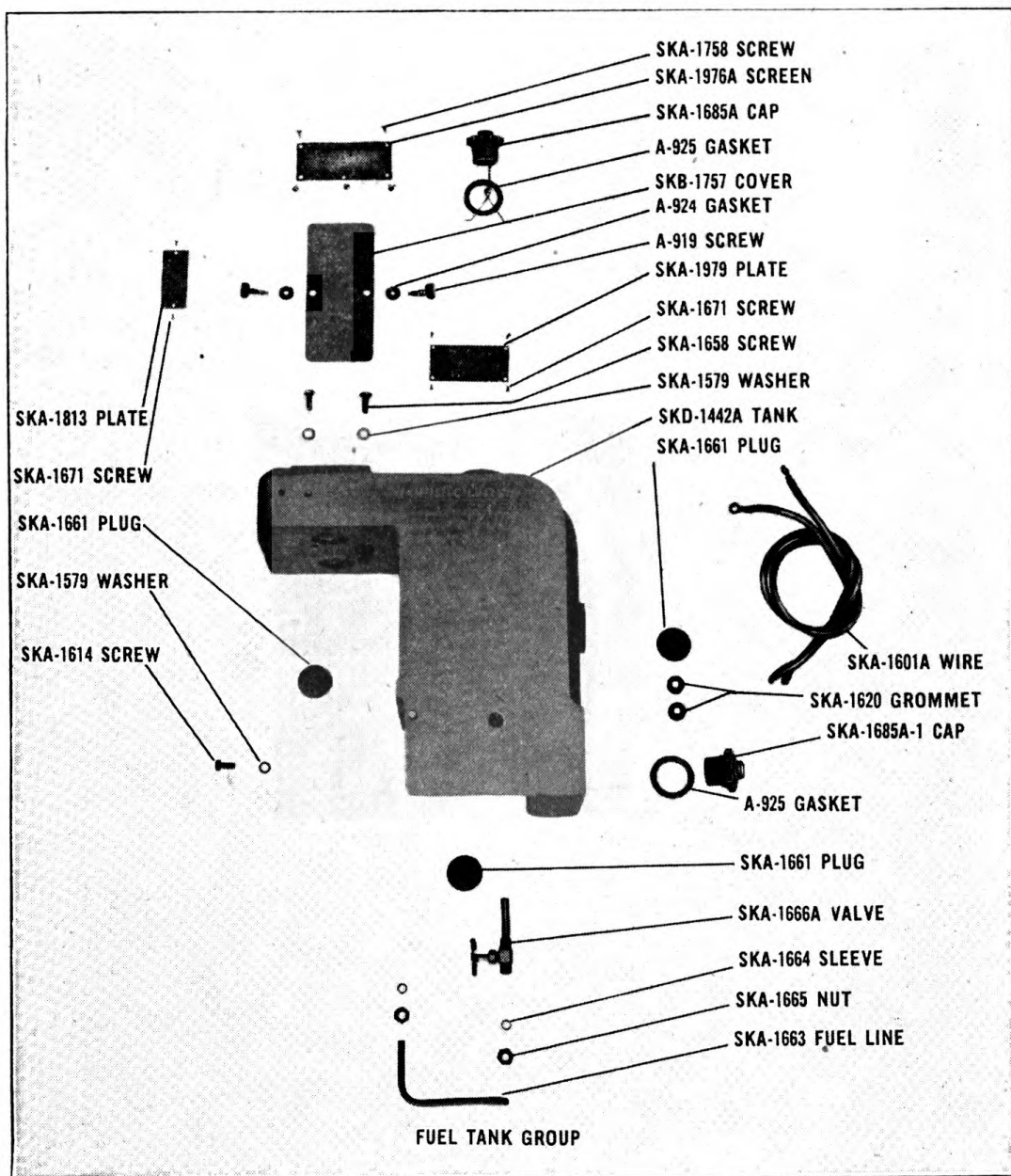


FIGURE 53

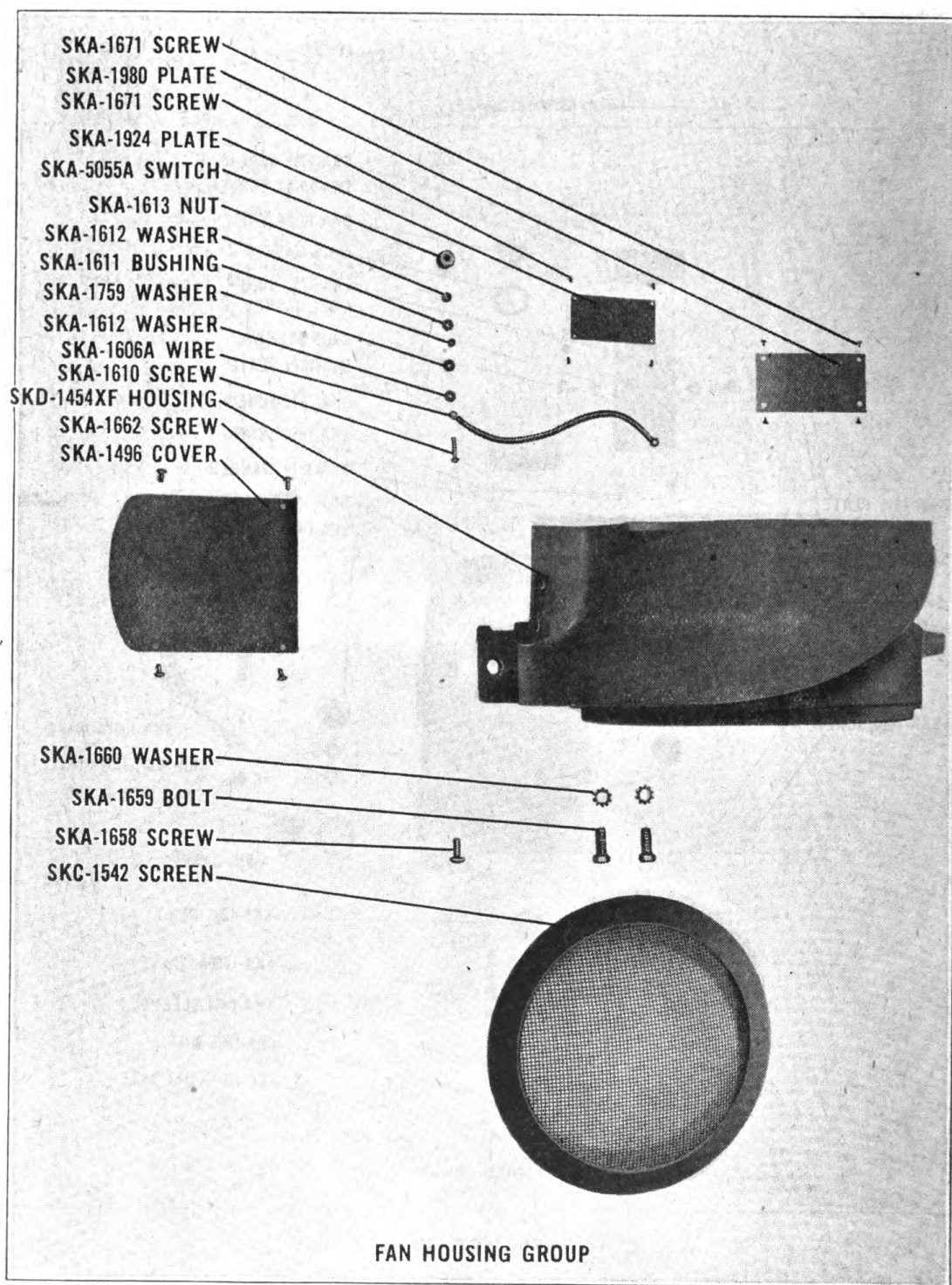


FIGURE 54

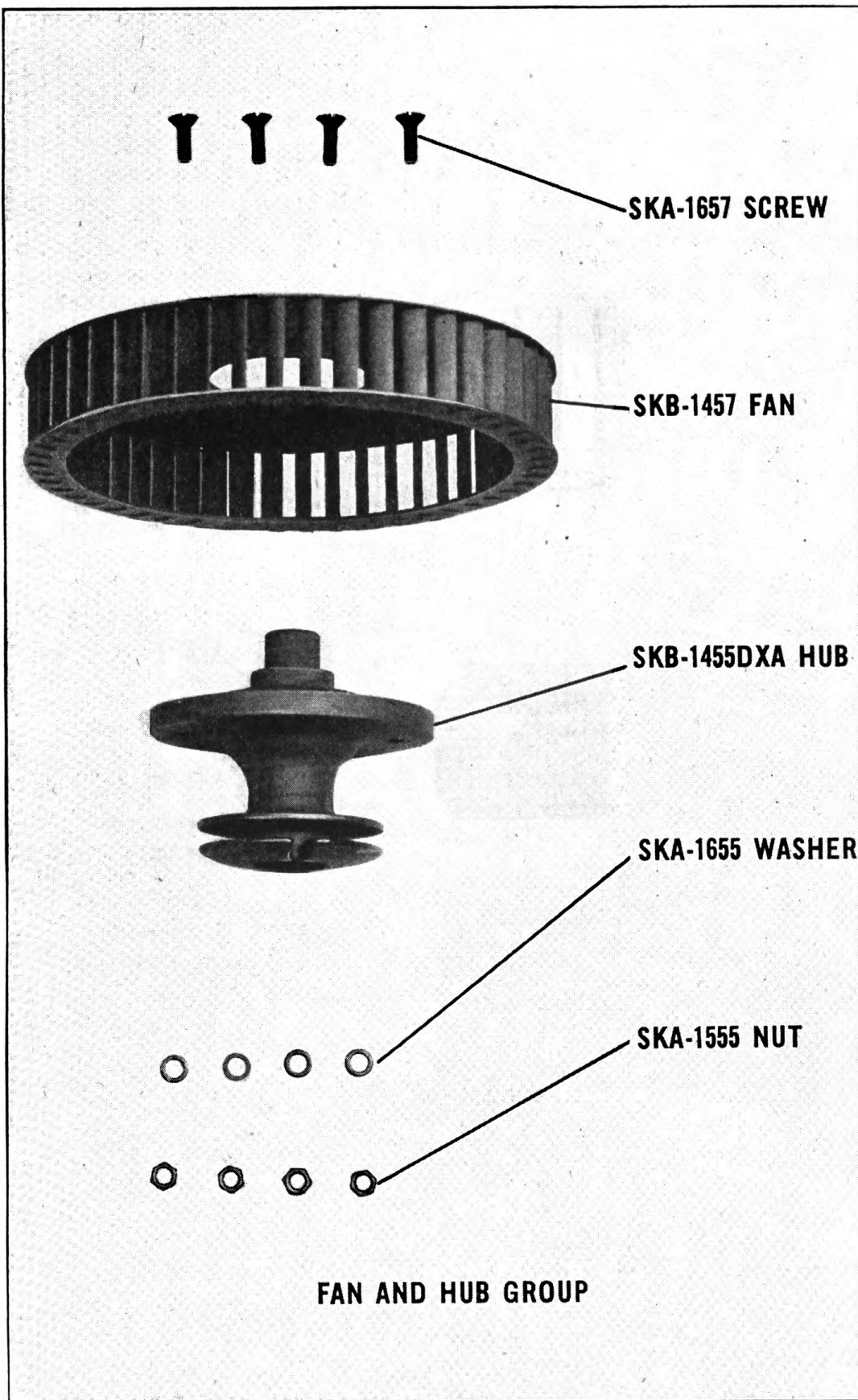
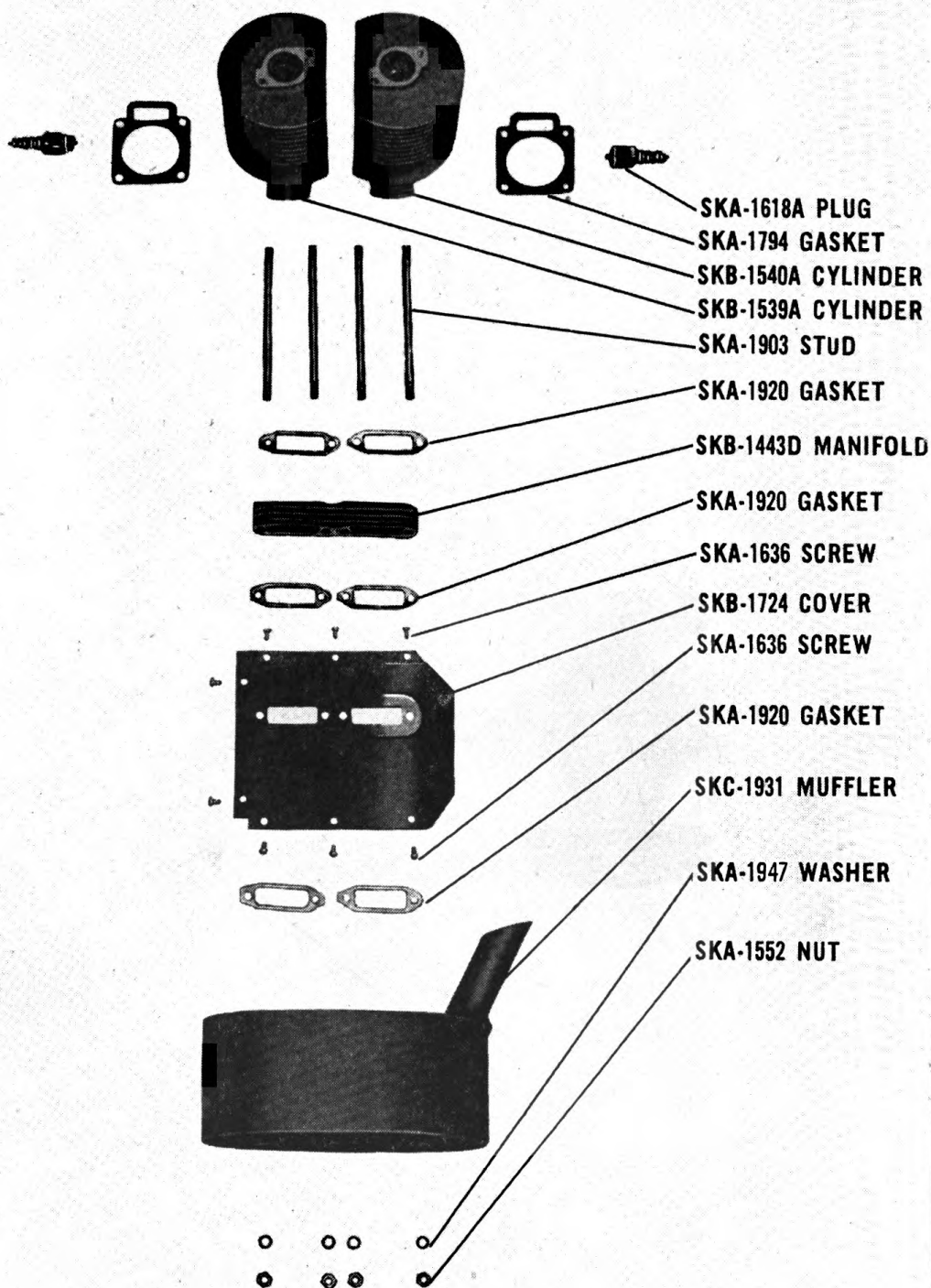


FIGURE 55



CYLINDER AND MUFFLER GROUP

FIGURE 56

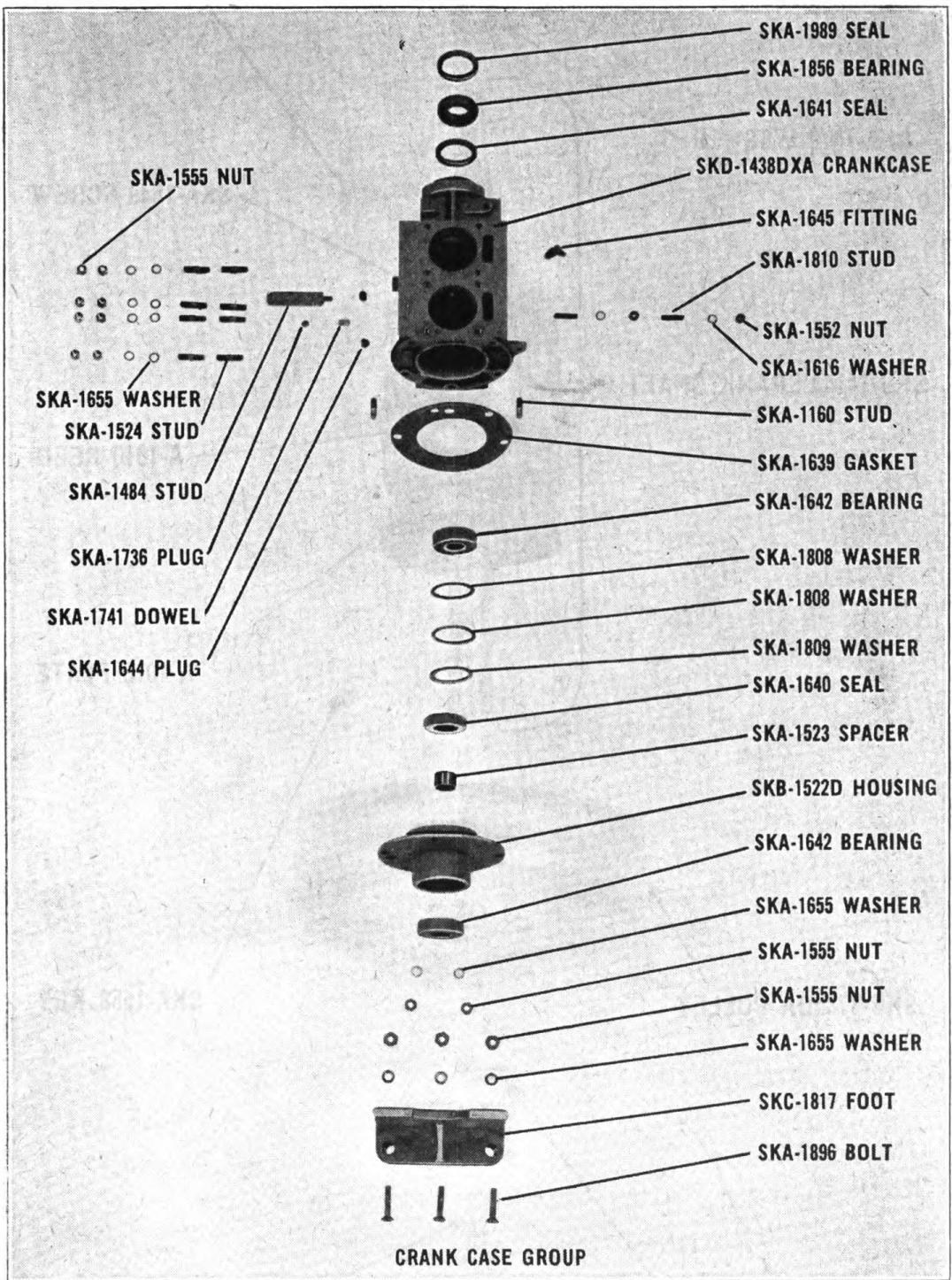
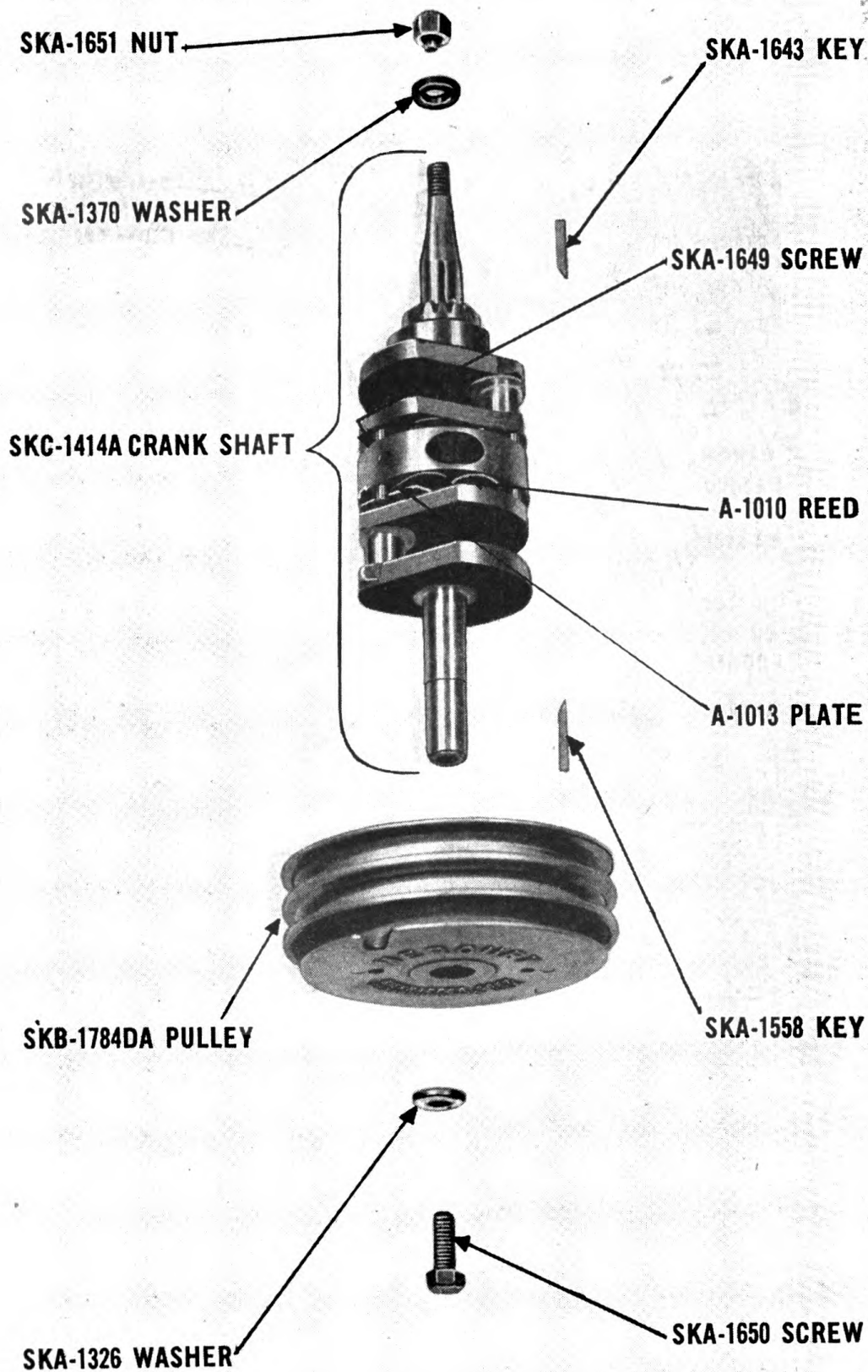
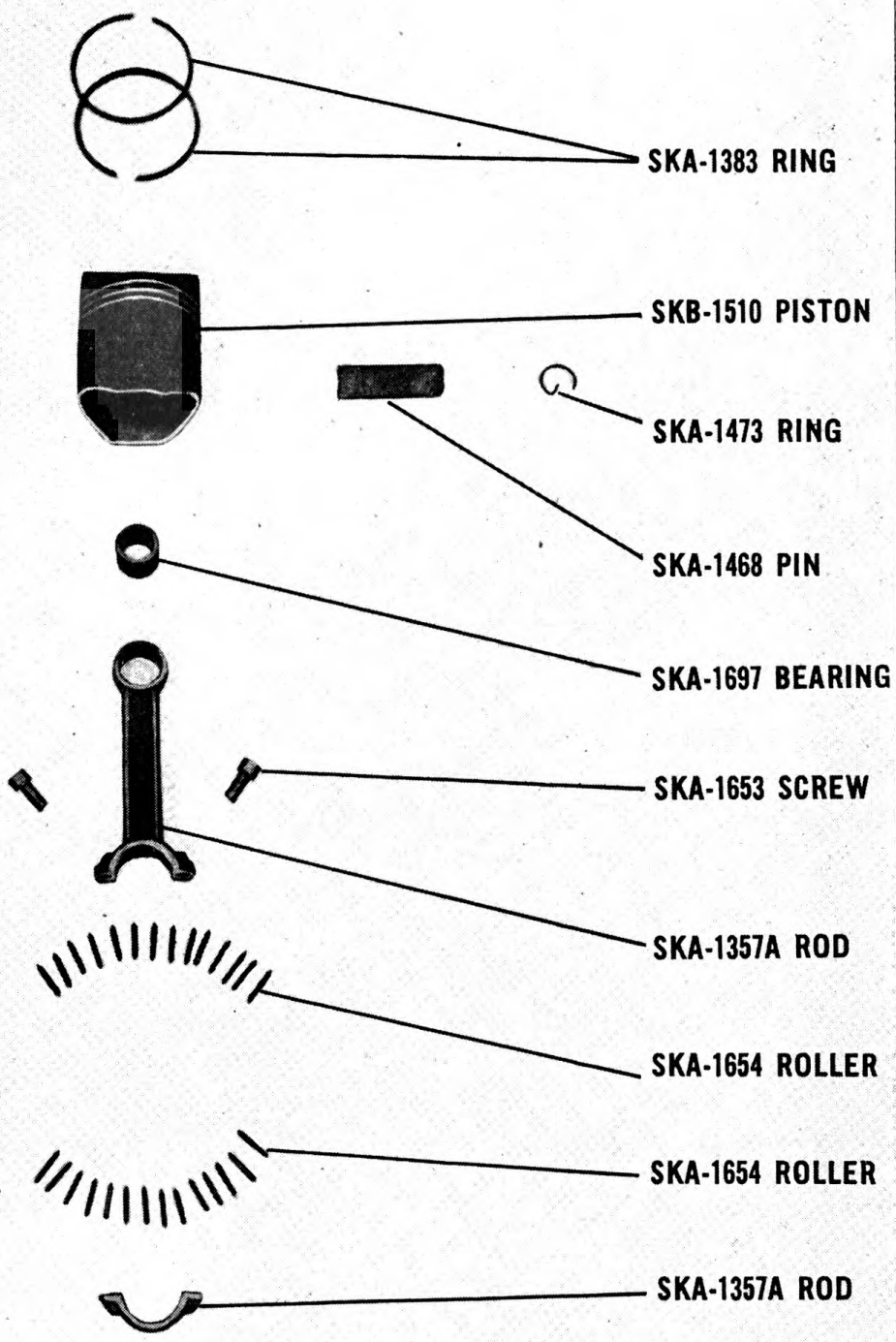


FIGURE 57



CRANK SHAFT AND PULLEY

FIGURE 58



PISTON AND CONNECTING ROD GROUP

FIGURE 59

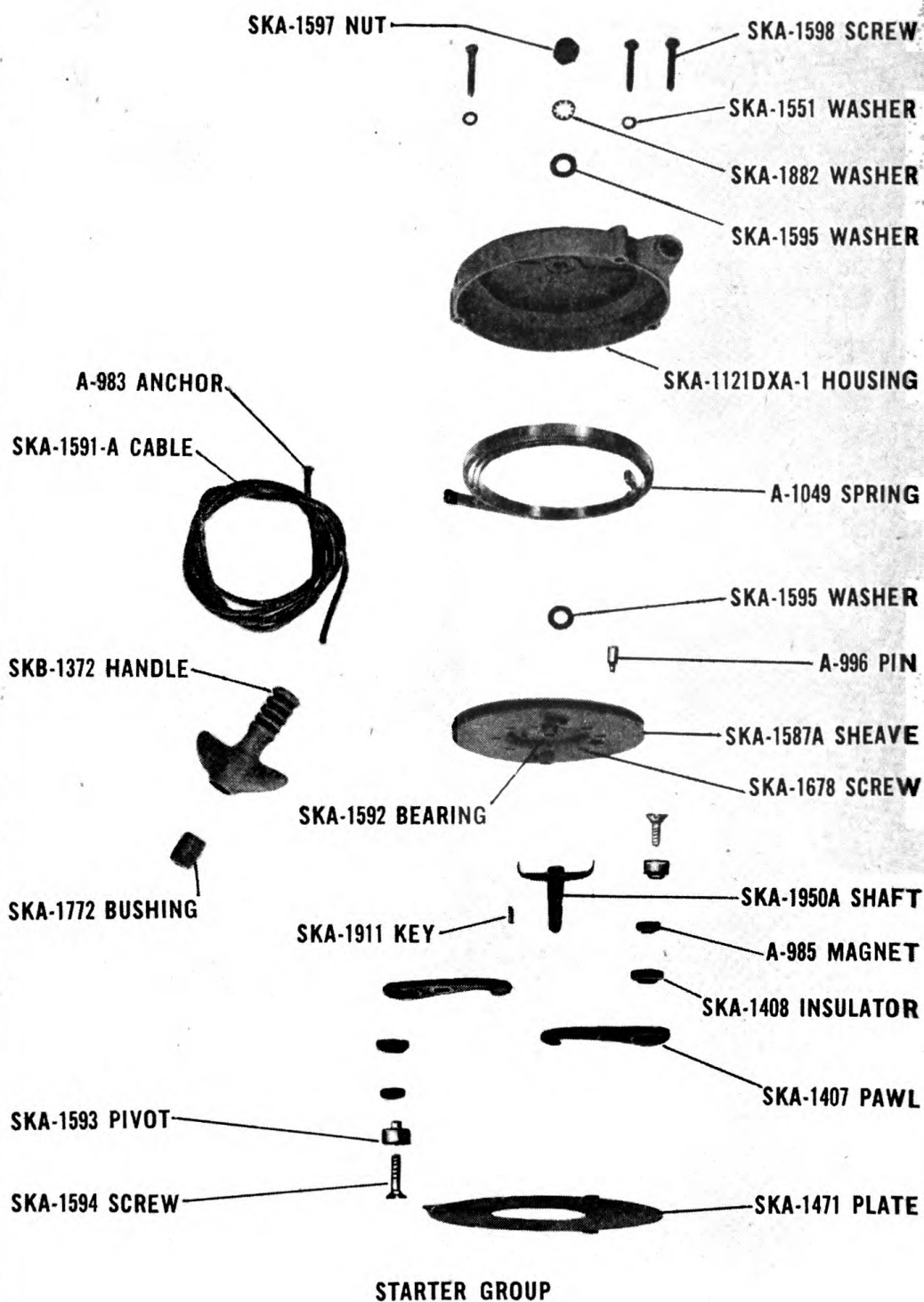
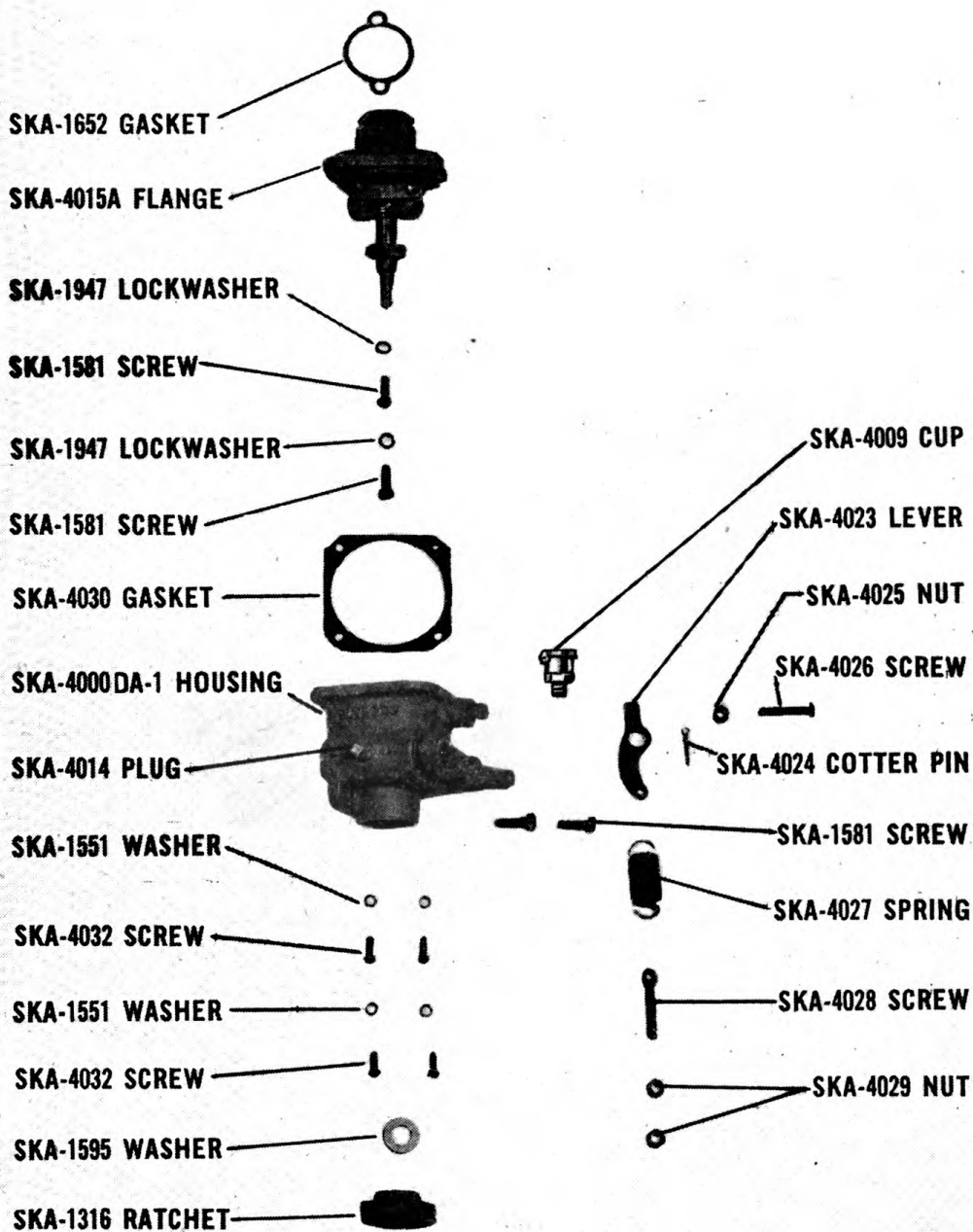
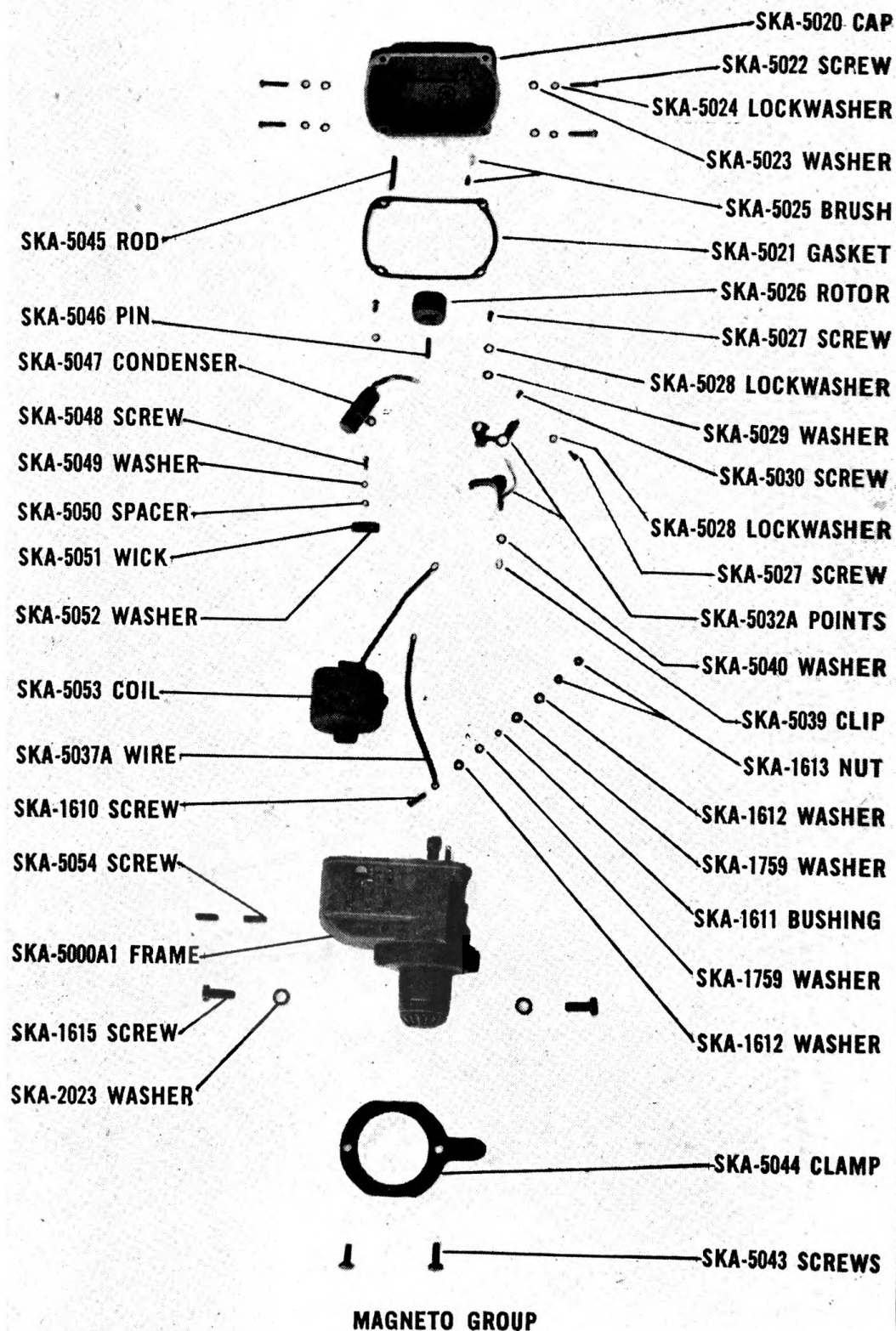


FIGURE 60



GOVERNOR GROUP

FIGURE 61



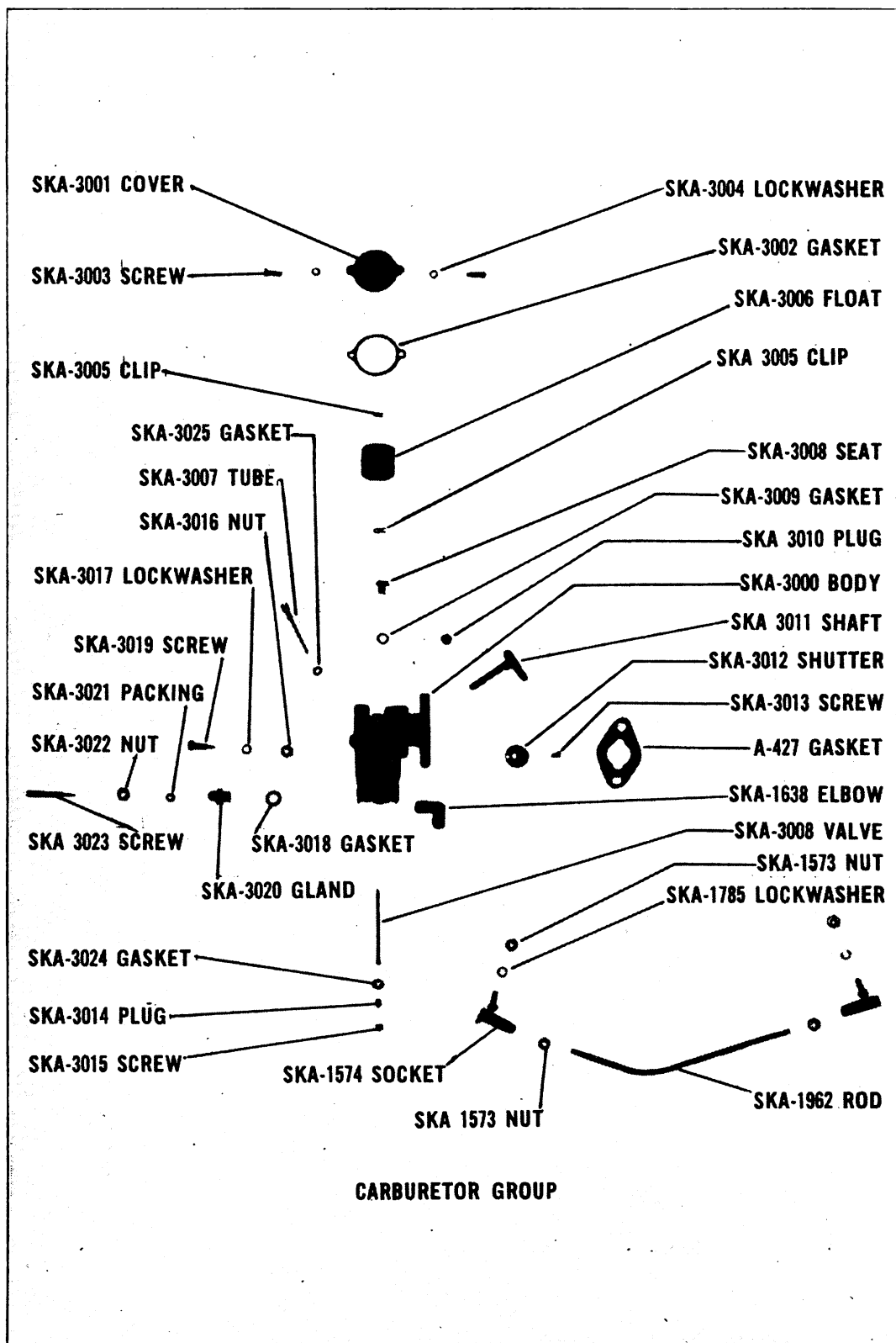
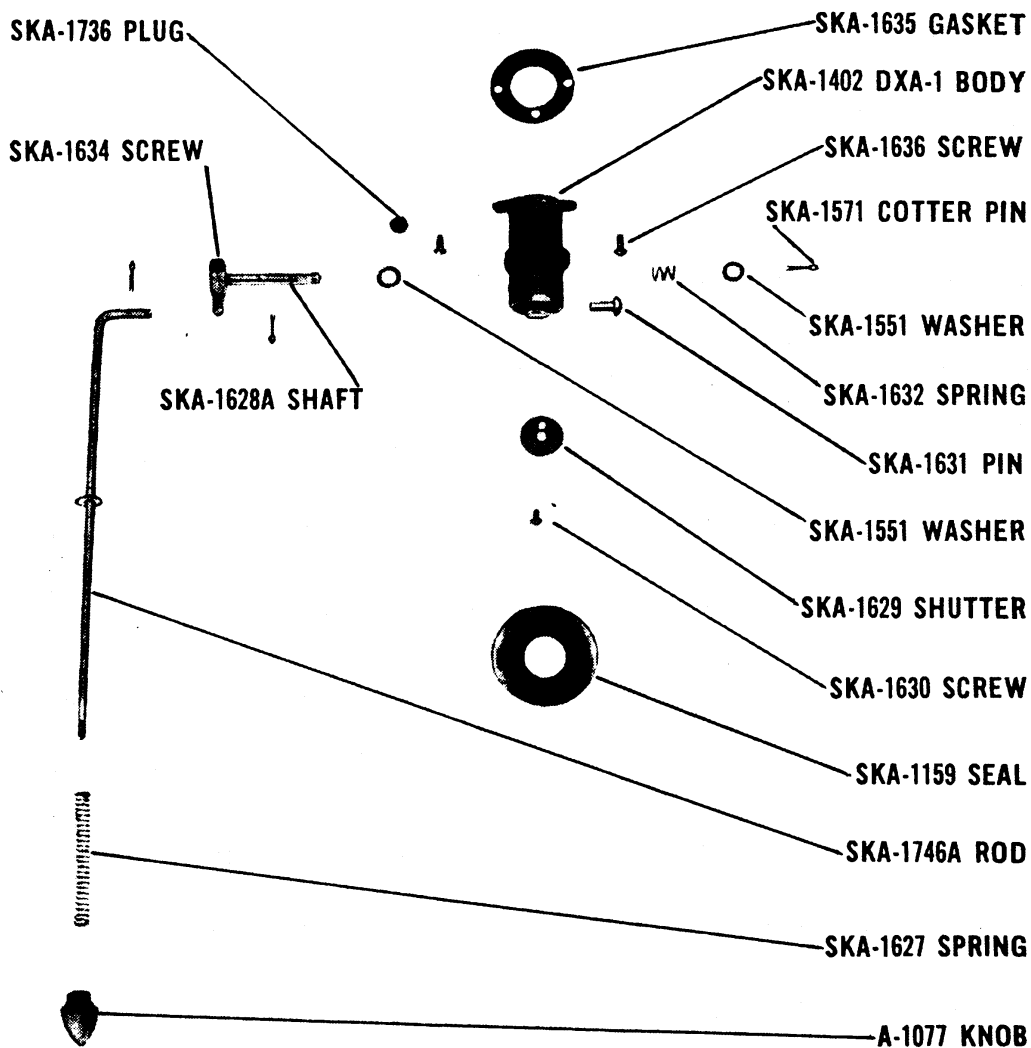


FIGURE 63



CHOKE BODY AND ROD GROUP

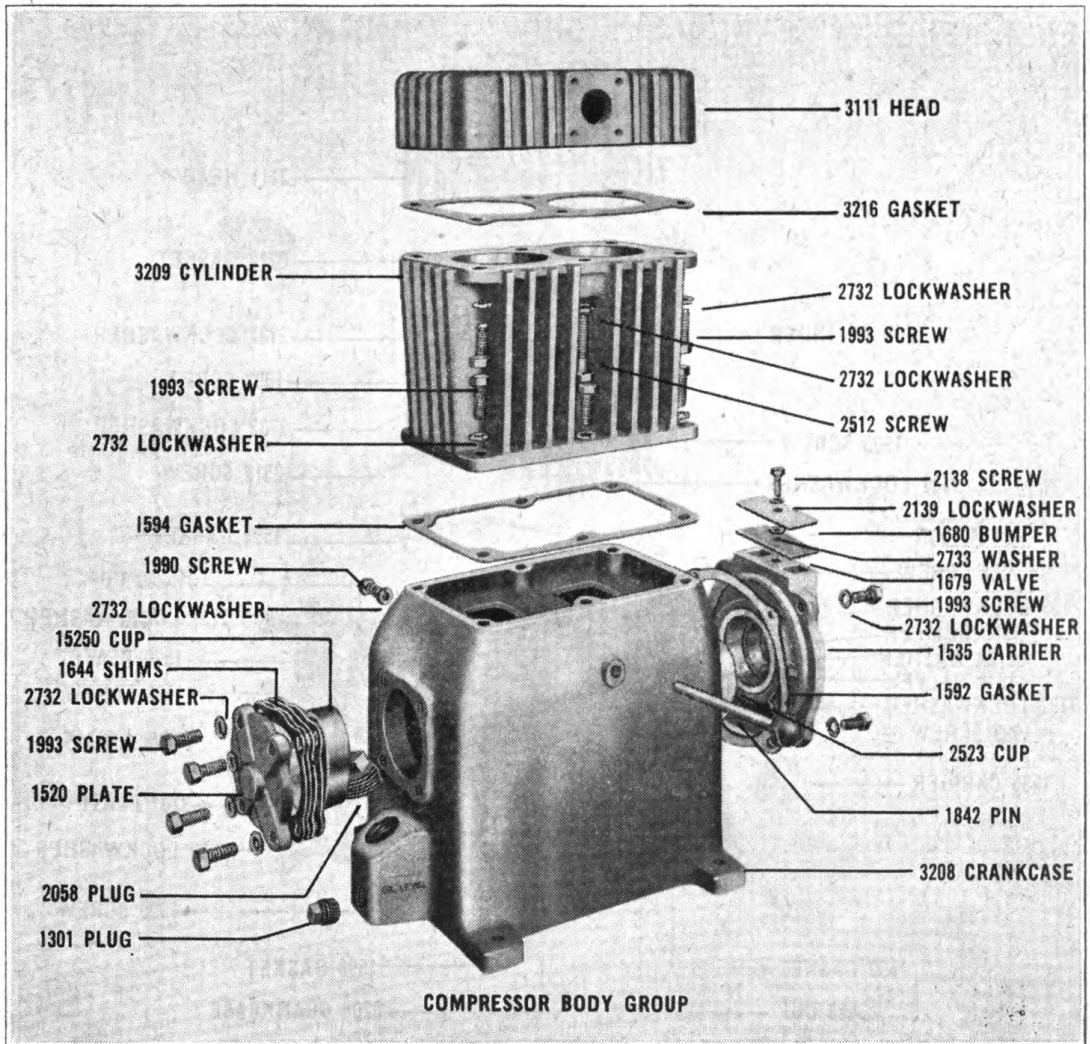


FIGURE 65

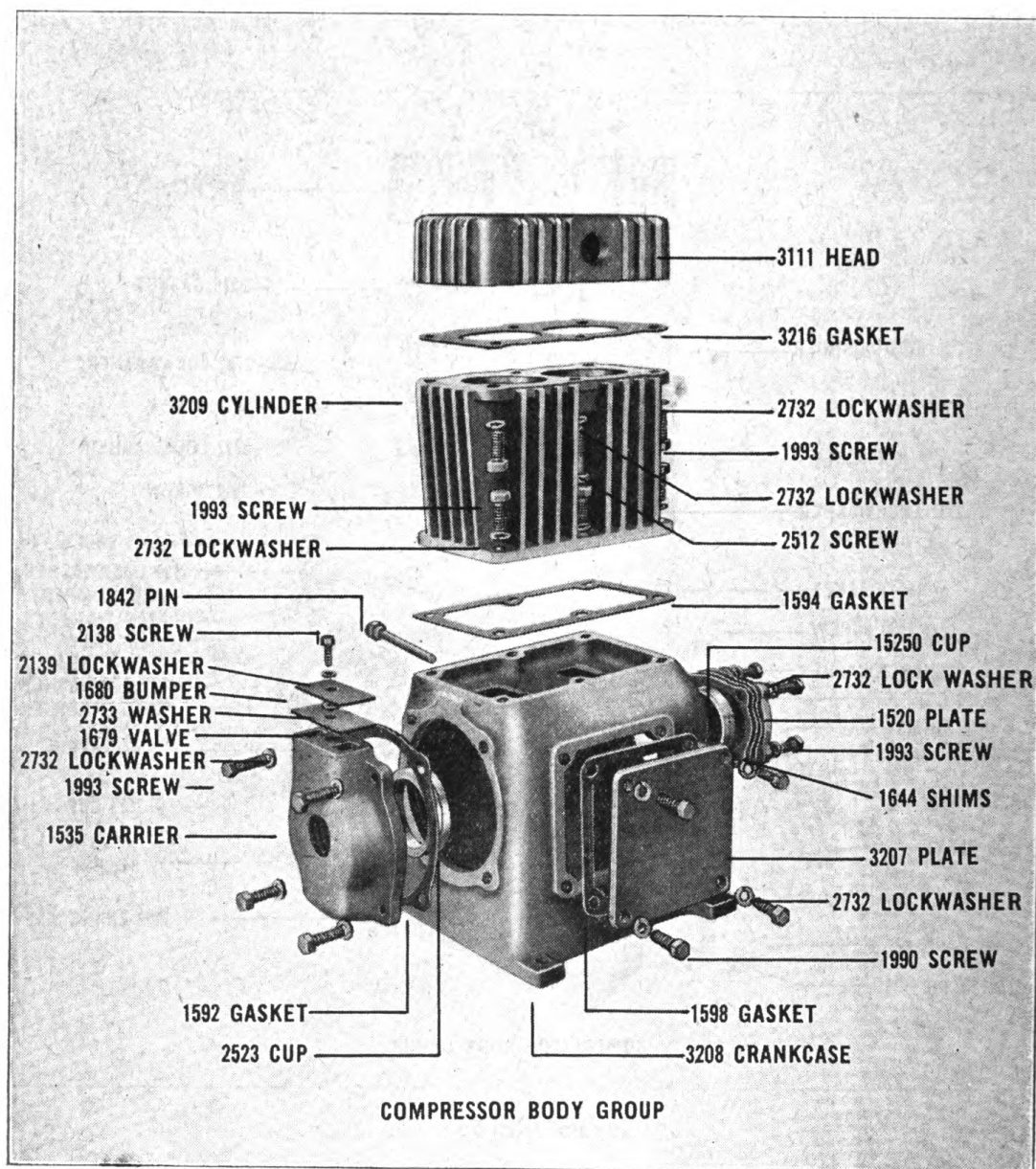


FIGURE 66

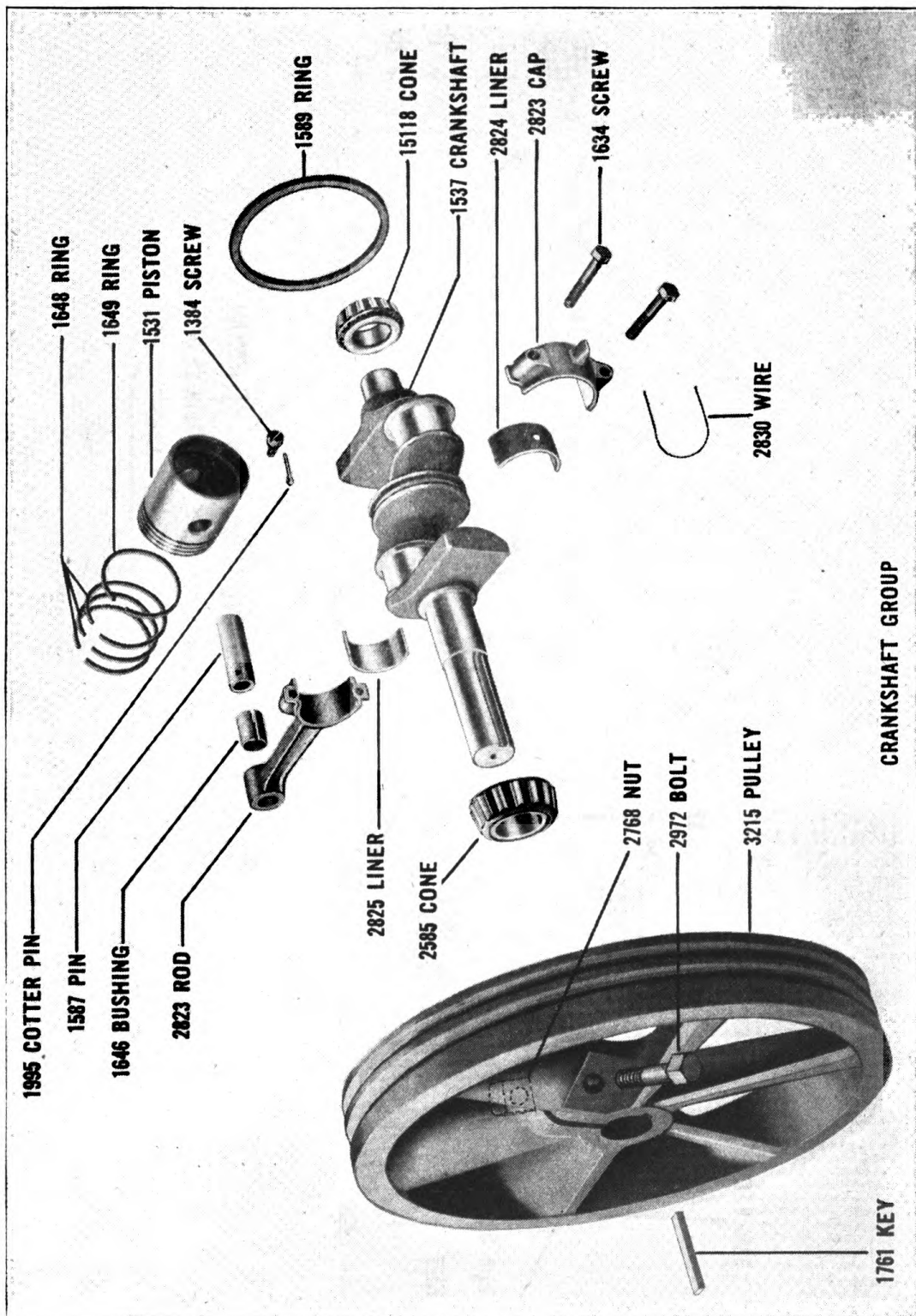


FIGURE 67

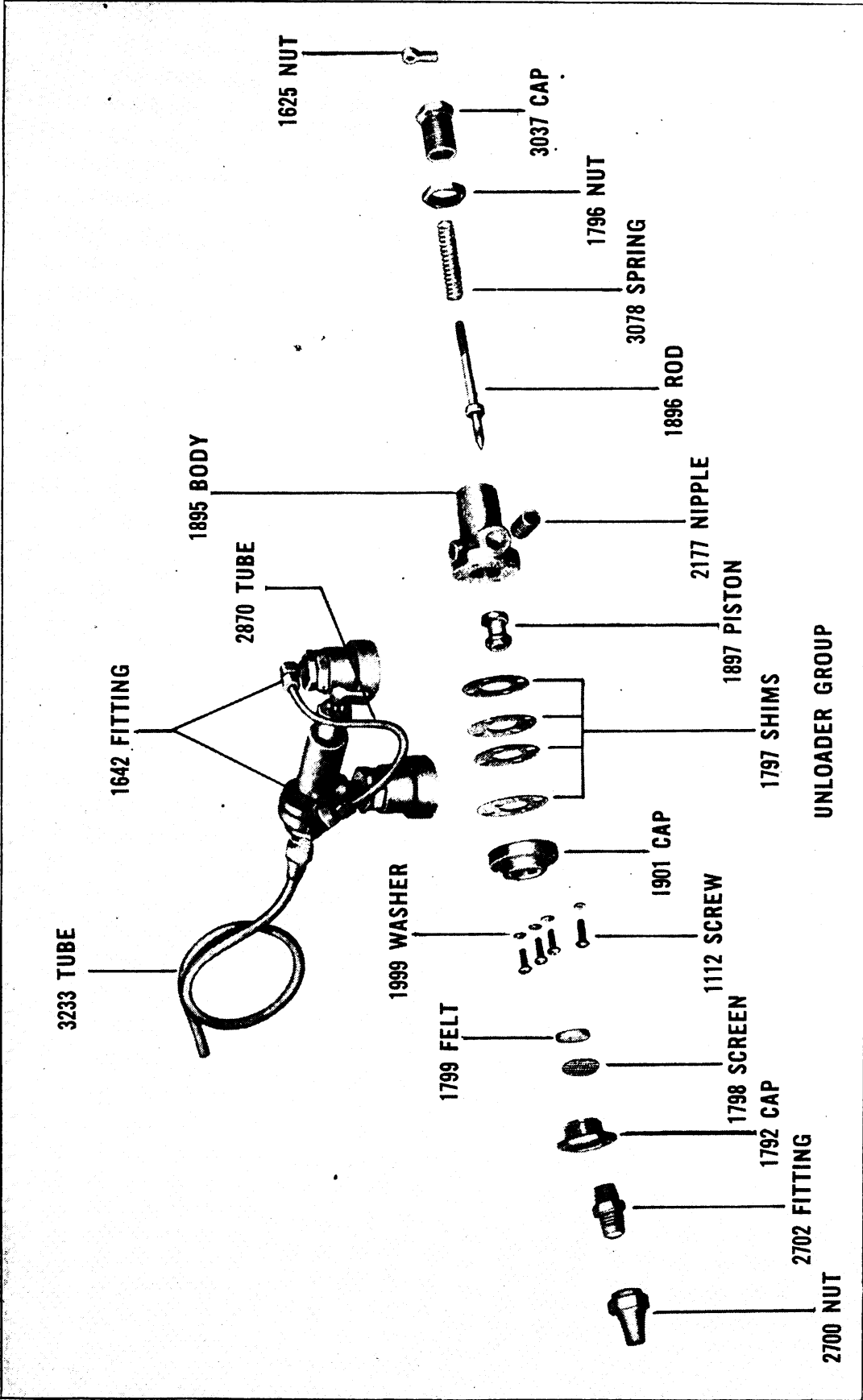


FIGURE 69

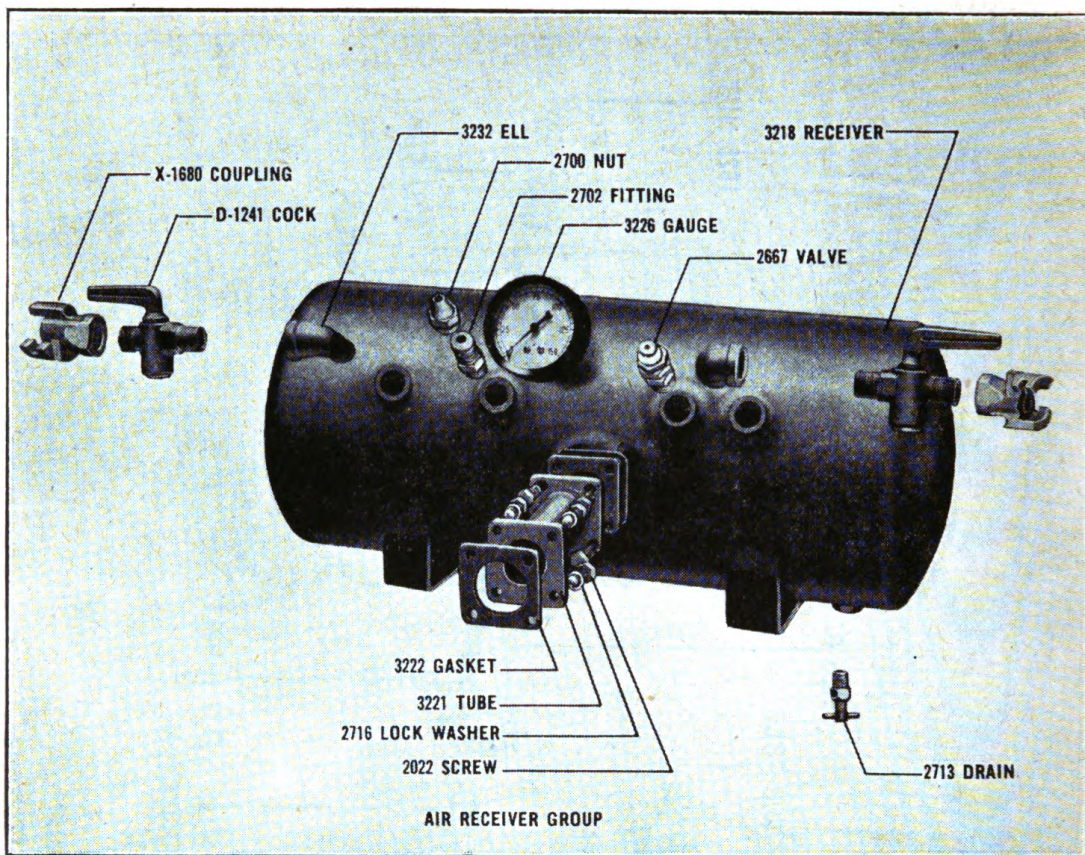


FIGURE 70

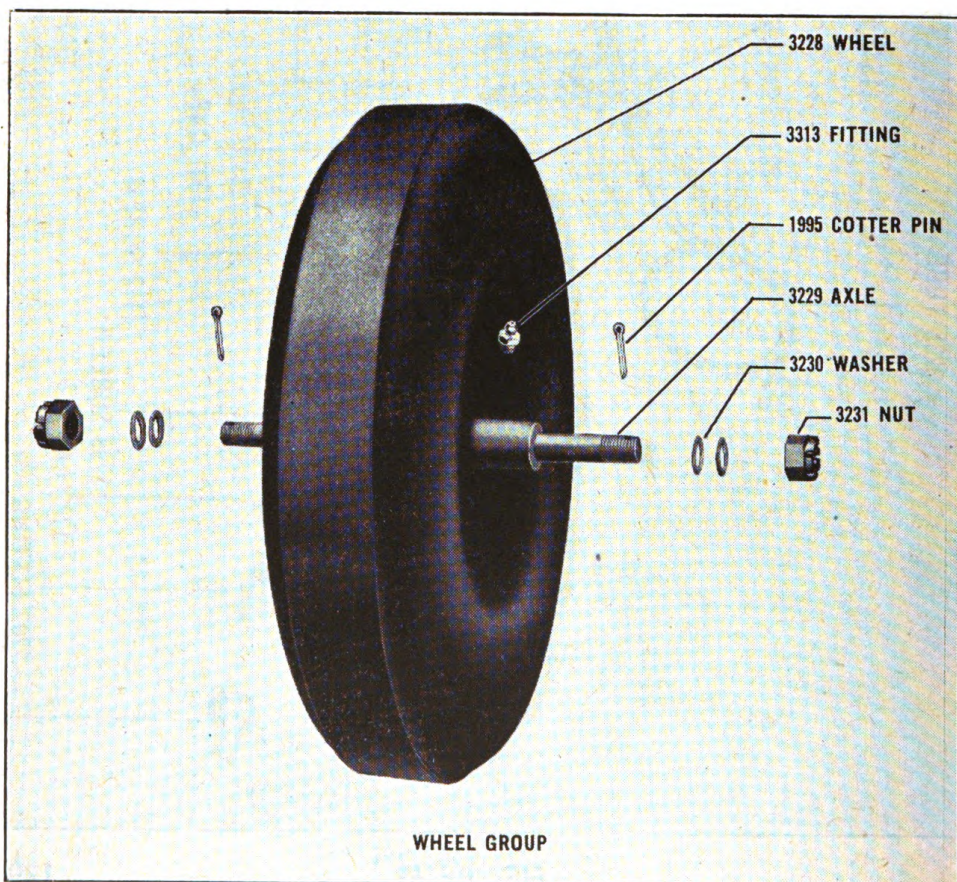


FIGURE 71

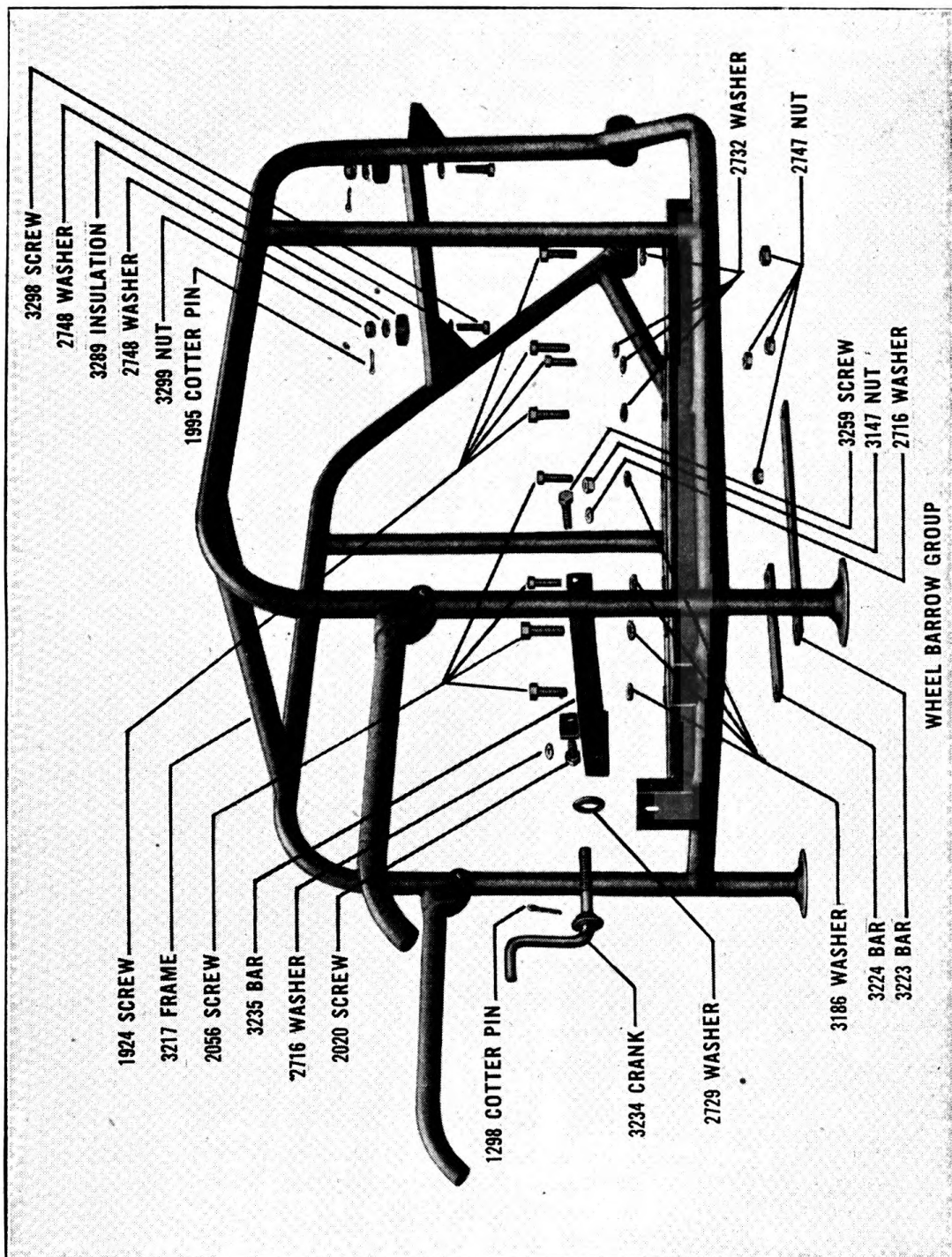
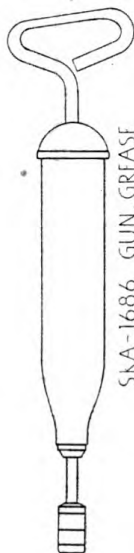


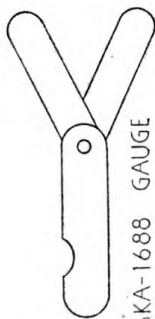
FIGURE 72



L-221 BRUSH



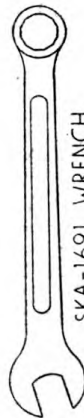
SKA-1686 GUN, GREASE



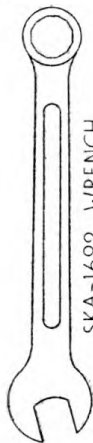
SKA-1688 GAUGE



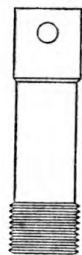
SKA-1689 WRENCH WITH HANDLE



SKA-1691 WRENCH



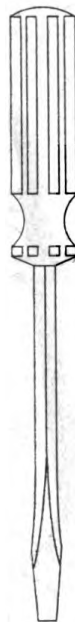
SKA-1692 WRENCH



SKA-1788 PULLER



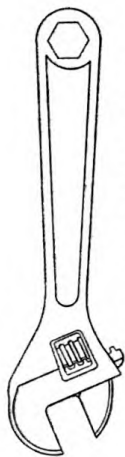
X-1648 PLIERS



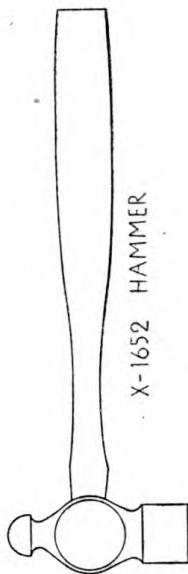
X-1649 SCREWDRIVER



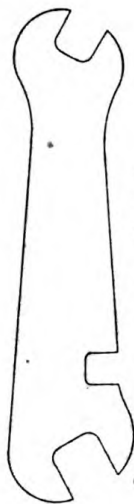
X-1650 SCREWDRIVER



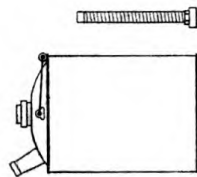
X-1651 ADJUSTABLE WRENCH



X-1652 HAMMER

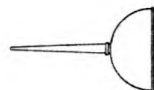


64729-3 WRENCH



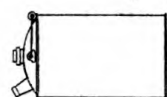
SKA-1681

CAN, GASOLINE



X-1653

CAN, OIL



SKA-1683

CAN, OIL

BINKS SPRAYING EQUIPMENT

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
2A	Respirator.....	...	65	5	2.50
2A-1	Filter, Respirator (100 in Box).....	...	65	4 1/2	1.75
AO-558	Plug, 1/4" Tapered Pipe.....	4	107	1/2	.10
D-380	Packing.....	2	108	1/8	.20
D-524	Cap, Filler.....	2	108	6 7/8	1.15
D-1052	Ring, Shaft Support.....	2	108	1/2	.15
D-1055	Pin, Supporting.....	2	108	1/8	.10
D-1185	Nipple, 3/8 Double Male.....	2	107	1 1/2	.50
D-1187	Crank.....	2	109	1—2	1.50
D-1207	Gasket, Filler Cap.....	2	108	1/8	.20
D-1211	Pin, Crank Drive.....	2	108	1/8	.10
D-1225	Cock, Material Assembly.....	2	108	10 3/8	1.45
D-1241	Cock, 3/8 Double Male.....	2	107-130	6 3/4	.90
D-1250	Screw, Set, 3/8x5/8" Square Head Cup Point.....	2	108	1/2	.10
D-1251	Screw, Set, 1/16x3/4" Square Head Cup Point.....	2	108	5/8	.10
D-1256-1	Screen, Filter.....	4	111	1/8	.15
D-1257	Plug, Filter.....	4	111	2 3/8	.25
D-1290	Gauge, 150 Pound.....	4	107	9 1/4	1.75
D-1420	Gasket, Head.....	2	109	5 1/2	1.75
D-1429	Clamp, "C".....	12	108	13	.90
D-1430	Screw, Clamp.....	12	108	5	.65
D-1432	Pin, "C" Clamp.....	12	108	1 3/8	.30
D-1438	Tank Shell.....	2	109	37—0	24.15
D-1446	Head, Tank.....	2	109	*12—8	9.20
D-1450	Valve, A.S.M.E Safety.....	2	107	5 3/4	4.05
D-1463	Nut, Material Outlet.....	2	108	3/4	.55
D-1467	Ring, Packing.....	2	108	3/8	.30
D-1468	Gland, Packing.....	2	108	3 1/4	1.15
D-1469	Box, Stuffing.....	2	108	1—11 1/2	5.20
D-1472	Gasket, Stuffing Box.....	2	108	1/8	.10
D-1474	Locknut, Stuffing Box.....	2	108	3 3/8	.80
D-1475	Paddle.....	2	108	1—1	1.75
D-1476	Paddle, Stationary.....	2	108	1—8 7/8	2.90
D-1481	Nipple, Filler.....	2	108	5 1/8	1.15
D-1512	Nut, Regulator.....	2	107	3 3/4	.75
D-1523	Body, Regulator.....	2	107	2—3	7.35
D-1541	Tube, Material, Assembly.....	2	108	12 7/8	2.05
D-1544	Shaft, Agitator, Assembly.....	2	108	2—3	2.05
	D-1052 Ring, Shaft Support.....	1	...	...	...
	D-1055 Pin, Supporting.....	1	...	...	...
	D-1211 Pin, Crank Drive.....	1	...	...	...
D-1546	Container, Inner.....	2	61	5—11	4.60
D-1699	Filter, Felt.....	2	111	*	.15
D-1703	Cock, 5/8-18x1/4 Pipe Thread.....	2	107	6 3/4	.90
D-1709	Body, Strainer.....	4	111	9	2.50
D-1710	Strainer, Material, Line Complete.....	1	111	11 1/2	2.90
	D-1256-1 Screen.....	1	...	...	...
	D-1257 Plug.....	1	...	...	...
	D-1709 Body.....	1	...	...	...
D-1711	Filter, Air Line Complete.....	1	111	11 1/2	3.05
	D-1256-1 Screen.....	1	...	...	...
	D-1257 Plug.....	1	...	...	...
	D-1699 Filter, Felt.....	1	...	...	...
	D-1709 Body.....	1	...	...	...
L-33-A	Spring, Material.....	2	106	1/8	.25
L-126	Screw, Trigger.....	2	106	*	.35
L-135	Nut, Air Valve Packing.....	2	106	1/8	.40

*Less than 1/8 ounce.

BINKS SPRAYING EQUIPMENT—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
L-152	Stem, Needle Valve #15SS.....	2	106	$\frac{1}{4}$	.60
L-158	Packing, Air Valve.....	2	106	*	.10
L-176	Ring, Retainer.....	1	110	$\frac{1}{8}$	.70
L-221	Brush, Cleaning.....	1	132	$\frac{3}{8}$	.10
NG-304	Spring, Side Port Control.....	2	106	*	.20
NG-372	Body, Air Nozzle, Internal Mix #703.....	2	106	$2\frac{3}{8}$	2.50
NG-373	Nozzle, Internal Mix Assembly.....	2	106	3	4.25
	NG-372 Body, Air Nozzle, Internal Mix.....	1	...	...	...
	T-862 Tip, Air Nozzle, Internal Mix #703...	1	...	...	...
PR-7	Body, Regulator.....	2	107	12	5.45
PR-8	Bonnet, Regulator.....	4	107	$9\frac{1}{8}$	2.00
PR-9	Screw, Wing.....	4	107	$1\frac{1}{4}$	.90
PR-10	Button, Spring.....	4	107	$\frac{1}{4}$	.35
PR-11	Spring, Diaphragm.....	4	107	$1\frac{3}{4}$	.40
PR-12	Button, Diaphragm.....	4	107	$\frac{3}{4}$	.70
PR-13	Diaphragm.....	4	107	$\frac{1}{4}$	.30
PR-15	Disc.....	4	107	$\frac{1}{4}$	.90
PR-17	Pin, Push.....	4	107	*	.55
PR-18	Seat.....	4	107	1	.90
PR-19	Stem.....	4	107	$\frac{1}{4}$	.60
PR-22	Spring, Valve.....	4	107	*	.30
PR-23	Screen, Regulator.....	4	107	*	.70
PR-24	Cap.....	4	107	$1\frac{1}{4}$	.90
PR-26	Screw, Bonnet (10-32x $\frac{5}{8}$ " Fillister Head, Steel Machine Screw).....	24	107	$\frac{1}{8}$	.10
PR-39	Nut, Lock.....	4	107	$\frac{1}{4}$	.35
R-118	Nut, Needle Valve Packing Assembly.....	2	106	$\frac{3}{8}$	.60
R-131	Nozzle, Air, R-3.....	1	110	$\frac{1}{4}$	1.75
R-601	Nozzle, Material—JA.....	1	110	$\frac{3}{8}$	1.75
SB-8	Valve, $\frac{1}{8}$ Release Assembly.....	2	107	1	.70
	SB-9 Body Release Assembly.....	1	...	...	...
	SB-10 Stem Release Assembly.....	1	...	...	...
SB-9	Body, $\frac{1}{8}$ Release Valve.....	2	107	$\frac{1}{2}$	.35
SB-10	Stem, $\frac{1}{8}$ Release Valve.....	2	107	$\frac{1}{2}$	.35
SC-264	Connection, $\frac{5}{16}$ Hose, Complete.....	4	112	$1\frac{1}{4}$	.65
SC-265	Connection, $\frac{3}{8}$ Hose, Complete.....	8	112	2	.70
T-58	Needle, Valve.....	1	110	1	3.60
T-138	Ring, Retainer.....	1	110	...	...
T-145	Body.....	1	110	$12\frac{1}{2}$	11.40
	T-138 Ring, Retainer.....	1	...	...	...
T-738	Packing.....	2	106	*	.05
T-747	Packing.....	4	106	*	.05
T-750	Spring, Air Valve.....	2	106	*	.20
T-862	Tip, Air Nozzle, Internal Mix #703.....	2	106	$\frac{5}{8}$	1.75
T-901	Nozzle, Material 66SS.....	2	106	$1\frac{3}{8}$	2.40
T-903	Nozzle, Air, Assembly 63P.....	2	106	$2\frac{5}{8}$	3.45
T-918	Gasket, Material Nozzle.....	2	106	*	.05
T-1007	Screw, Material Control.....	2	106	$\frac{5}{8}$	.35
T-1008	Nut, Needle Lock.....	3	106-110	$\frac{1}{8}$	.30
T-1009	Guide, Needle.....	3	106-110	$\frac{3}{8}$	.35
T-1010	Body, Air Valve.....	2	106	$\frac{1}{2}$	1.25
T-1013	Body, Material Control.....	2	106	$\frac{7}{8}$	.45
T-1014	Pin, Side Port Control.....	2	106	*	.10
T-1015	Washer, Side Port Control.....	2	106	*	.10
T-1016	Washer, Packing.....	4	106	*	.05
T-1017	Body, Side Port Control.....	2	106	$\frac{1}{4}$	.35
T-1020	Stud, Trigger.....	2	106	$\frac{3}{16}$	.45

*Less than $\frac{1}{8}$ ounce.

BINKS SPRAYING EQUIPMENT—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
T-1023	Screw, Side Port Control.....	2	106	$\frac{7}{8}$	.70
T-1024	Control, Side Port, Assembly.....	2	106	$1\frac{3}{16}$	1.50
NG-304	Spring, Side Port Control.....	1	...	...	...
T-738	Packing.....	2	...	...	...
T-1014	Pin, Side Port Control.....	1	...	...	...
T-1015	Washer, Side Port Control.....	1	...	...	...
T-1016	Washer, Packing.....	2	...	...	...
T-1017	Body, Side Port Control.....	1	...	...	...
T-1023	Screw, Side Port Control.....	1	...	...	...
T-1025	Stem, Air Valve, Assembly.....	2	106	$\frac{1}{4}$	.50
T-1026	Trigger.....	2	106	$1\frac{3}{4}$	1.35
T-1028	Needle, Complete #15SS.....	2	106	$\frac{5}{8}$	1.25
L-152	Stem, Needle Valve #15SS.....	1	...	...	...
T-1008	Nut, Needle Lock.....	1	...	...	...
T-1009	Guide, Needle.....	1	...	...	...
T-1032	Body.....	2	106	1— $4\frac{1}{2}$	9.85
T-1033	Connection, Air.....	2	106	$\frac{3}{4}$	.50
X-824	Screw, Packing Gland ($\frac{5}{16} \times \frac{1}{4}$ Hex Head Steel Cap Screw).....	4	108	$\frac{1}{2}$	.10
X-1048	Screw, Disc (5-40x $\frac{3}{8}$ Flat Head Brass Machine Screw).....	8	107	*	.10
X-1194	Seal, Oil (Git Manufacturing Co. #OS-625).....	2	108	$\frac{5}{8}$	.70
X-1195	Pin, Cotter ($\frac{1}{8} \times \frac{3}{4}$ Steel Cotter Pin).....	12	108	$\frac{1}{8}$	.10
X-1433	Plate, Serial and Type.....	2	108	$\frac{1}{8}$	.20
X-1648	Pliers, Combination (#646 VP Barcolo Mfg. Co.).....	1	132	$5\frac{1}{2}$	.35
X-1649	Screw Driver 5" Blade (#A-416S-5 Vaco).....	1	132	$3\frac{1}{8}$	1.00
X-1650	Screw Driver, 3" Blade (#A-316R-3 Vaco).....	1	132	$1\frac{5}{8}$	.60
X-1651	Wrench, 8" Adjustable (A-18 Crescent).....	1	132	$8\frac{1}{4}$	.95
X-1652	Hammer, Ball Pein (801B Heller Brothers Co.)..	1	132	1— 1	1.00
X-1653	Can, Oil, $\frac{1}{2}$ Pint with 5" Spout (#14AA Noera Mfg. Co.).....	1	132	$3\frac{1}{4}$	.25
X-1655	Gasket, Coupling (#2081 Independent Pneumatic Tool Co.).....	4	112	$\frac{1}{8}$	.10
X-1671	Pin, Drive ($^{\circ}0 \times \frac{1}{8}$, Type U Parker Kalon).....	4	108	*	.05
X-1672	Coupling (#2070 Independent Pneumatic Tool Co.).....	4	112	$7\frac{3}{8}$	1.35
X-1673	Clamp, Hose, Complete (#2085 Independent Pneumatic Tool Co.).....	4	112	1	.25
X-1680	Coupling (Tank End) (#2077 Independent Pneumatic Tool Co.).....	2	130	$4\frac{3}{8}$	1.35
43375	Bearing, Stuffing Box.....	2	108	$1\frac{1}{8}$	.20
44104	Hose, $\frac{3}{8}$ Air, 50 feet long, with Connections.....	4	112	9— 6	14.90
44105	Hose, $\frac{5}{16}$ Air, 30 feet long, with Connections.....	2	112	4— 3	7.30
44106	Hose, $\frac{3}{8}$ Material, 30 feet long, with Connections	2	112	4— 6	8.30
64729-3	Wrench, Combination Gun and Coupling.....	1	132	$5\frac{7}{8}$	.25

*Less than $\frac{1}{8}$ ounce.

COMPRESSOR AND WHEELBARROW PARTS

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
1112	Screw, VD Unloader (#10-24 Thrd x $\frac{5}{8}$ " Fillister Head).....	4	129	*	.06
1298	Cotter Pin, Engine Draw Bar Crank ($\frac{1}{8}$ " x 1" Steel).....	1	131	*	.05
1301	Plug, Crankcase Oil Drain ($\frac{3}{8}$ " I.P.T. Square Head).....	1	125	1	.10
1368	Spring, Discharge Valve.....	4	128	$\frac{1}{6}$	.25
1384	Screw, Set, Piston Pin.....	2	127	$\frac{1}{8}$	.25
1520	Plate, Bearing Adjustment.....	1	125	11	1.00
1531	Piston.....	2	127	1—11	4.50
1535	Carrier, Bearing.....	1	125	3—15 $\frac{1}{2}$	4.00
1537	Crankshaft.....	1	127	11— 2 $\frac{1}{2}$	15.00
1552	Valve.....	8	128	*	.75
1554	Gasket, Discharge Valve Assembly.....	4	128	*	.10
1555	Cap, Valve Assembly.....	6	128	6	.70
1556	Gasket, Discharge Valve Assembly Cap.....	4	128	*	.15
1587	Pin, Piston.....	2	127	3	1.20
1589	Ring, Oil Circulating.....	1	127	$\frac{1}{2}$	.75
1592	Gasket, Bearing Carrier.....	1	125	*	.15
1594	Gasket, Cylinder to Case.....	1	125	*	.25
1598	Gasket, Hand Hole Plate.....	1	126	$\frac{1}{5}$	.15
1625	Nut, Wing, VD Unloader.....	1	129	$\frac{1}{8}$	.23
1634	Screw, Connecting Rod Cap.....	4	127	1	.20
1642	Fitting, Pilot to Unloader Tube (Weatherhead W69x4).....	2	129	1	.35
1644	Shims, Bearing Adjustment Plate.....	4†	125	*	.15
1646	Bushing, Connecting Rod.....	2	127	$\frac{1}{2}$	.25
1648	Ring, Piston (Compression).....	6	127	$\frac{1}{2}$	.50
1649	Ring, Piston (Oil Control).....	2	127	$\frac{1}{2}$	.60
1679	Valve, Breather.....	1	125	*	.15
1680	Bumper, Breather Valve.....	1	125	1	.20
1761	Key, Pulley.....	1	127	$\frac{1}{2}$	.40
1792	Cap, Intake, VD Unloader.....	1	129	1	1.00
1796	Nut Lock, VD Unloader Adjustment.....	1	129	$\frac{1}{2}$	.30
1797	Shim, VD Unloader.....	5†	129	*	.06
1798	Screen, VD Unloader Intake Filter.....	2	129	*	.06
1799	Felt, VD Unloader Intake Filter.....	1	129	*	.12
1842	Pin, Oil Circulating Ring Retainer.....	1	125	2	.30
1895	Body, VD Unloader.....	1	129	9	7.60
1896	Rod, VD Unloader.....	1	129	1	1.00
1897	Piston, VD Unloader.....	1	129	1	3.60
1901	Cap, VD Unloader.....	1	129	3	2.60
1919	Seat, Discharge Valve.....	4	128	1	1.25
1924	Screw, Air Compressor to Frame ($\frac{3}{8}$ " x 1 $\frac{1}{4}$ " N.C. Hex. Head).....	4	131	1	.15
1990	Screw, Hand Hole Plate ($\frac{3}{8}$ " x $\frac{3}{4}$ " N.C. Hex. Head).....	4	125	$\frac{1}{2}$	.10
1993	Screw ($\frac{3}{8}$ " x 1" N.C. Hex. Head).....	18	125	$\frac{1}{2}$	.10
1995	Cotter Pin ($\frac{3}{32}$ " x 1" Steel).....	6	127	*	.05
1999	Washer, VD Unloader.....	4	129	*	.06
2022	Screw, Discharge Tube ($\frac{5}{16}$ " x $\frac{3}{4}$ " N.C. Hex. Head).....	10	130	$\frac{1}{8}$	.15
2056	Screw, Engine to Draw Bar ($\frac{1}{2}$ " x 1" N.C. Hex. Head).....	4	131	1	.05
2058	Plug, Crankcase Oil Filler ($\frac{3}{4}$ " I.P.T. Square Head).....	1	125	2	.15
2138	Screw, Breather Valve Bumper ($\frac{1}{4}$ " x $\frac{1}{2}$ " N.C. Hex. Head).....	1	125	$\frac{1}{6}$	.10

*Less than $\frac{1}{8}$ ounce.

†Varies.

COMPRESSOR AND WHEELBARROW PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
2139	Lockwasher, Breather Valve Bumper ($\frac{1}{4}$ " Shake-proof).....	1	125	*	.05
2177	Nipple, Pilot to Head ($\frac{1}{4}$ " Extra Heavy Close)....	1	129	$\frac{1}{2}$	.20
2472	Gasket, Suction Valve Assembly.....	4	128	*	.15
2512	Screw, Head to Cylinder ($\frac{3}{8}$ " x $1\frac{3}{4}$ " N.C. Hex. Head).....	2	125	1	.15
2523	Cup, Timken Bearing (Pulley Side) (Timken Roller Brg. Co. #2523).....	1	125	6	1.78
2585	Cone, Timken Bearing (Pulley Side) (Timken Roller Brg. Co. #2585).....	1	127	9	3.10
2667	Valve, Safety.....	1	130	3	4.00
2700	Nut, VD Pilot to Receiver Fitting (Weatherhead W41x6).....	2	129	$\frac{1}{2}$	.25
2702	Fitting, VD Pilot to Receiver (Weatherhead W48x6).....	2	129	1	.30
2713	Drain, Air Receiver (245 F2 Anderson).....	1	130	$\frac{1}{2}$	.25
2716	Lockwasher ($\frac{5}{16}$ " Split).....	11	131	*	.05
2729	Washer, Engine Draw Bar Crank ($\frac{1}{16}$ " Plain).....	1	131	$\frac{1}{6}$	.05
2732	Lockwasher ($\frac{3}{8}$ " Split).....	28	125	*	.05
2733	Washer, Breather Valve Bumper ($\frac{1}{4}$ " Plain).....	1	125	*	.05
2747	Nut, Air Compressor to Frame ($\frac{3}{8}$ " N.C. Hex.)..	4	131	$\frac{1}{4}$	.05
2748	Washer, Air Receiver to Frame ($\frac{3}{8}$ " Plain).....	4	131	$\frac{1}{8}$	.05
2768	Nut, Pulley ($\frac{1}{2}$ " N.C. Square).....	1	127	1	.10
2823	Rod and Cap, Connecting.....	2	127	15	8.50
2824	Liner, Connecting Rod (Lower).....	2	127	1	.50
2825	Liner, Connecting Rod (Upper).....	2	127	1	.50
2830	Wire, Connecting Rod.....	2	127	*	.05
2870	Tube, Pilot to Unloader.....	1	129	1	.25
2972	Bolt, Pulley $\frac{1}{2}$ "x $2\frac{1}{2}$ " N.C. Hex. Head).....	1	127	3	.25
3008	Sleeve, Valve Assembly Hold Down.....	8	128	2	.80
3009	Seat, Suction Valve.....	4	128	8	2.00
3010	Bumper, Discharge Valve.....	4	128	5	2.00
3011	Bumper, Suction Valve.....	4	128	$\frac{1}{8}$	.50
3012	Spring, Suction Valve.....	4	128	*	.25
3037	Cap, VD Unloader Adjustment.....	1	129	2	1.30
3078	Spring, VD Unloader.....	1	129	$\frac{1}{8}$	.60
3111	Head, Cylinder.....	1	125	9—4	12.00
3147	Nut, Screw, Engine Draw Bar ($\frac{5}{16}$ " N.C. Hex.)....	1	131	$\frac{1}{8}$	.05
3186	Lockwasher, Engine to Draw Bar ($\frac{1}{2}$ " Split)....	4	131	$\frac{1}{4}$	.05
3207	Plate, Hand Hole.....	1	126	1—1	1.00
3208	Crankcase.....	1	125	23—10	20.00
3209	Cylinder.....	1	125	17—2	16.00
3210	Gasket, Cap, Unloading Body.....	2	128	*	.10
3211	Body, Unloader.....	2	128	9	3.00
3212	Cap, Unloader Body.....	2	128	2	.75
3213	Piston, Unloader.....	2	128	1	1.50
3214	Plunger, Unloader.....	2	128	1	1.25
3215	Pulley.....	1	127	21—5	13.00
3216	Gasket, Head to Cylinder.....	1	125	1	.50
3217	Frame.....	1	131	30—0	50.00
3218	Receiver, Air.....	1	130	12—2	40.00
3220	Belt (1 M056 Dayton).....	2	130	5	2.00
3221	Tube, Discharge.....	1	130	15	1.00
3222	Gasket, Discharge Tube.....	2	130	$\frac{1}{6}$	.15
3223	Bar, Engine Clamp.....	1	131	9	.75
3224	Bar, Engine Clamp.....	1	131	4	.50
3226	Gauge (James P. Marsh Corp. #1—DP).....	1	130	9	2.50
3227	Filter, Intake (Air Maze Corp. #1—GA).....	1	130	1—4	5.00

*Less than $\frac{1}{8}$ ounce.

†Varies.

COMPRESSOR AND WHEELBARROW PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
3228	Wheel.....	1	130	15— 3	18.00
3229	Axle, Wheel.....	1	130	14	1.50
3230	Washer, Wheel Axle.....	4	130	*	.05
3231	Nut, Wheel Axle ($\frac{5}{8}$ " N.F. Hex. Light Castle)...	2	130	1	.10
3232	Ell, Outlet Valve Street ($\frac{3}{8}$ " Street Ell 1-P.T.)....	2	130	2	.25
3233	Tube, VD Pilot to Receiver.....	1	129	5	.50
3234	Crank, Engine Draw Bar.....	1	131	7½	1.50
3235	Bar, Draw, Engine.....	1	131	1— 1	1.50
3236	Spring, Unloader Body Plunger.....	2	128	*	.30
3254	Pilot, VD Unloader Complete.....	1	129	1— 6	14.00
	1112 Screw, VD Unloader.....	4	...	...	...
	1625 Nut, Wing, VD Unloader.....	1	...	...	...
	1792 Cap, Intake, VD Unloader.....	1	...	...	...
	1796 Nut, Lock, VD Unloader Adjustment.....	1	...	...	...
	1797 Shim, VD Unloader.....	5†	...	...	...
	1798 Screen, VD Unloader Intake Filter.....	2	...	...	...
	1799 Felt, VD Unloader Intake Filter.....	1	...	...	...
	1895 Body, VD Unloader.....	1	...	...	...
	1896 Rod, VD Unloader.....	1	...	...	...
	1897 Piston, VD Unloader.....	1	...	...	...
	1901 Cap, VD Unloader.....	1	...	...	...
	1999 Washer, VD Unloader.....	4	...	...	...
	3037 Cap, VD Unloader Adjustment.....	1	...	...	...
	3078 Spring, VD Unloader.....	1	...	...	...
3256	Gaskets, Set Compressor Complete.....	1	...	1½	2.50
	1554 Gasket, Discharge Valve Assembly.....	4	...	...	...
	1556 Gasket, Cap, Discharge Valve Assembly..	4	...	...	...
	1592 Gasket, Bearing Carrier.....	1	...	...	...
	1594 Gasket, Cylinder to Case.....	1	...	...	...
	1598 Gasket, Hand Hole Plate.....	1	...	...	...
	2472 Gasket, Suction Valve Assembly.....	4	...	...	...
	3210 Gasket, Cap, Unloader Body.....	2	...	...	...
	3216 Gasket, Head to Cylinder.....	1	...	...	...
3259	Screw, Engine Draw Bar ($\frac{5}{16}$ "x3" N.C. Hex. Head).....	1	131	1	.05
3283	Valve, Suction Assembly.....	4	128	8½	3.50
	1552 Valve.....	1	...	...	...
	2472 Gasket, Suction Valve Assembly.....	1	...	...	...
	3009 Seat, Suction Valve.....	1	...	...	...
	3011 Bumper, Suction Valve.....	1	...	...	...
	3012 Spring, Suction Valve.....	1	...	...	...
3284	Valve, Discharge Assembly.....	4	128	6¾	4.25
	1368 Spring, Discharge Valve.....	1	...	...	...
	1552 Valve.....	1	...	...	...
	1554 Gasket, Discharge Valve Assembly.....	1	...	...	...
	1919 Seat, Discharge Valve.....	1	...	...	...
	3010 Bumper, Discharge Valve.....	1	...	...	...
3289	Insulation, Rubber, Air Receiver to Frame.....	2	131	½	.50
3298	Screw, Air Receiver to Frame ($\frac{3}{8}$ "x1¼" N.F. Hex. Head).....	2	131	1	.10
3299	Nut, Air Receiver to Frame ($\frac{3}{8}$ " N.F. Hex. Light Castle)...	2	131	⅓	.10
3313	Fitting, Alemite (Alemite #3313).....	2	130	¼	.25
3370	Filter Medium for Intake Filter.....	1	...	8	1.30
15118	Cone, Timken Bearing (Opposite Pulley) (Timken Roller Brg. Co. #15118).....	1	127	6	2.32
15250	Cup, Timken Bearing (Opposite Pulley) (Timken Roller Brg. Co. #15250).....	1	125	4	.95

*Less than ⅛ ounce.

†Varies.

GASOLINE ENGINE PARTS

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
A-427	Gasket, Carpuretor.....	1	123	*	.05
A-919	Screw, Spark Plug Cover.....	2	113	1/2	.15
A-924	Gasket, Spark Plug Cover Screw.....	2	113	*	.05
A-925	Gasket, Fuel Tank Cap.....	2	113	*	.05
A-983	Anchor, Starter Cable.....	1	120	*	.10
A-985	Magnet, Starter Pawl.....	2	120	1/2	.40
A-996	Pin, Starter Sheave Spring Anchor.....	1	120	*	.04
A-1010	Reed, Intake Valve.....	4	118	*	.05
A-1013	Plate, Reed Rocker.....	4	118	3/8	.15
A-1049	Spring, Starter.....	1	120	6 1/4	.80
A-1077	Knob, Choke.....	1	124	*	.08
SKC-1121-DXA	Starter Assembly Complete.....	1	120	4—0	10.00
A-1049	Spring, Starter.....	1	...	...	...
SKA-1121DXA-1	Housing Assembly, Starter...	1	...	...	...
SKB-1372	Handle, Starter Cable.....	1	...	...	...
SKA-1407A	Pawl Assembly, Starter.....	2	...	...	...
SKA-1471	Plate, Starter Friction.....	1	...	...	...
SKA-1587A	Sheave, Flange Assembly, Starter..	1	...	...	...
SKA-1591A	Cable Assembly, Starter.....	1	...	...	...
SKA-1595	Washer, Thrust.....	1	...	...	...
SKA-1597	Nut, Sheave Shaft (Acorn).....	1	...	...	...
SKA-1772	Bushing, Starter Handle.....	1	...	...	...
SKA-1882	Washer, 7/16 Internal Shakeproof....	1	...	...	...
SKA-1911	Key, Starter Housing.....	1	...	...	...
SKA-1950A	Shaft, Starter Sheave Assembly....	1	...	...	...
SKC-1121DXA-1	Housing Assembly, Starter.....	1	120	12	2.00
SKA-1159	Seal, Ring, Choke Body.....	1	124	*	.09
SKA-1160	Stud, Rear Bearing Housing.....	1	117	*	.25
SKA-1316	Ratchet, Starter.....	1	121	4 1/4	2.10
SKA-1326	Washer, Starter Pulley.....	1	118	3/4	.20
SKA-1357A	Rod, Connecting Assembly.....	2	119	6 1/4	9.00
SKA-1653	Screw, Connecting Rod Cap.....	2	...	...	...
SKA-1654	Roller, Connecting Rod Bearing....	28	...	...	...
SKA-1697	Bearing, Piston Pin.....	1	...	...	...
SKA-1370	Washer, Fan Hub Nut.....	1	118	1/2	.20
SKB-1372	Handle, Starter Cable.....	1	120	2 1/4	1.00
SKA-1383	Ring, Piston (Wilkening Mfg. Co.)....	4	119	*	.25
SKA-1402-DXA	Choke Assembly Complete.....	1	125	2	2.00
SKA-1551	Washer.....	2	...	...	...
SKA-1571	Cotter Pin.....	1	...	...	...
SKA-1628A	Shaft and Lever Assembly, Choke..	1	...	...	...
SKA-1629	Shutter, Choke.....	1	...	...	...
SKA-1630	Screw, Choke Shutter.....	1	...	...	...
SKA-1631	Pin, Stop, Choke Shutter.....	1	...	...	...
SKA-1632	Spring, Choke Shaft.....	1	...	...	...
SKA-1736	Plug, Welch.....	1	...	...	...
SKA-1402-DXA-1	Body Assembly, Choke.....	1	125	2	2.00
SKA-1407	Pawl, Starter.....	2	120	2 1/4	.70
SKA-1407A	Pawl Assembly, Starter.....	2	120	3 1/4	2.00
A-985	Magnet, Starter Pawl.....	1	...	...	...
SKA-1407	Pawl, Starter.....	1	...	...	...
SKA-1408	Insulator, Starter Pawl Magnet....	1	...	...	...
SKA-1408	Insulator, Starter Pawl Magnet.....	2	120	1/2	.30
SKC-1414A	Crankshaft Assembly.....	1	118	5—12 1/2	40.00
A-1010	Reed, Intake Valve.....	4	...	...	...
A-1013	Plate, Reed Rocker.....	4	...	...	...
SKA-1649	Screw, Intake Valve Reed.....	4	...	...	...
SKA-1798	Screw, Clamp, Center Main Bearing	2	...	...	...
SKD-1438DXA	Crankcase Assembly.....	1	117	4—1 1/4	22.00

*Less than 1/4 ounce.

GASOLINE ENGINE PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
	SKA-1641 Seal, Oil, Accessory Drive.....	1	...	...	...
	SKA-1644 Plug, Drain, Crankcase.....	2	...	...	...
	SKA-1645 Fitting, Grease.....	1	...	...	...
	SKA-1856 Bearing, Fan Hub.....	1	...	...	...
	SKA-1989 Seal, Oil, Fan Hub.....	1	...	...	...
SKD-1442A	Tank Assembly, Fuel.....	1	113	7 — ½	21.00
	SKA-1601A Wire Assembly, Spark Plug.....	2	...	...	...
	SKA-1620 Grommet, Spark Plug Wire.....	2	...	...	...
	SKA-1661 Plug, Welch, Fuel Tank.....	4	...	...	...
	SKA-1666A Valve, Shut-off, and Strainer Assembly.....	1	...	...	...
	SKA-1671 Screw, Drive, Name Plate.....	4	...	...	...
	SKA-1685A Cap, Fuel Tank.....	1	...	...	...
	SKA-1685A-1 Cap, Air Passage Clean Out.....	1	...	...	...
	SKA-1979 Plate, Fuel Instruction.....	1	...	...	...
SKB-1443D	Manifold, Exhaust.....	1	116	4 ¼	.55
SKD-1454XF	Housing, Fan.....	1	114	6— 4 ¼	15.00
SKB-1455DXA	Hub Assembly, Fan.....	1	115	1—11 ¼	9.00
SKB-1457	Fan.....	1	115	1—14 ¼	3.00
SKB-1457A	Fan and Hub Assembly.....	1	115	3—11 ¾	15.00
	SKB-1455DXA Hub Assembly, Fan.....	1	...	...	...
	SKB-1457 Fan.....	1	...	...	...
	SKA-1555 Nut.....	4	...	...	...
	SKA-1655 Washer.....	4	...	...	...
	SKA-1657 Screw, Fan Mounting.....	4	...	...	...
SKA-1468	Pin, Piston.....	2	119	1 ¼	.35
SKA-1471	Plate, Starter Friction.....	1	120	8 ¼	.15
SKA-1473	Ring, Lock, Piston Pin.....	4	119	*	.02
SKA-1484	Stud, Starter Support.....	1	117	3 ½	.45
SKA-1496	Cover Plate, Magnet.....	1	114	3 ¼	.20
SKB-1510	Piston.....	2	119	4 ½	3.25
SKB-1510A	Piston and Connecting Rod Assembly.....	2	119	12 ¼	14.50
	SKA-1357A Rod, Connecting Assembly.....	1	...	...	...
	SKA-1383 Ring, Piston.....	2	...	...	...
	SKA-1468 Pin, Piston.....	1	...	...	...
	SKA-1473 Ring, Lock, Piston Pin.....	2	...	...	...
	SKB-1510 Piston.....	1	...	...	...
SKB-1522D	Housing, Rear Bearing.....	1	117	15 ¼	3.00
SKB-1522DA	Housing Assembly, Rear Bearing.....	1	117	1—12	8.00
	SKB-1522D Housing, Rear Bearing.....	1	...	...	...
	SKA-1523 Spacer, Bearing.....	1	...	...	...
	SKA-1640 Seal, Oil, Bearing Housing.....	1	...	...	...
	SKA-1642 Bearing, Ball, Crankshaft.....	2	...	...	...
	SKA-1808 Washer, Pre-Loading—Rubber.....	2	...	...	...
	SKA-1809 Washer, Pre-Loading—Steel.....	1	...	...	...
SKA-1523	Spacer, Bearing.....	1	117	1	.75
SKA-1524	Stud, Cylinder Mounting.....	8	117	¾	.25
SKB-1539A	Cylinder Assembly, Front.....	1	116	2— 7	8.50
SKB-1540A	Cylinder Assembly, Rear.....	1	116	2— 7 ¼	8.50
SKC-1542	Screen, Fan.....	1	114	12 ¼	1.50
SKA-1551	Washer (¼ Flat).....	9	116	*	.02
SKA-1552	Nut (¼-28 Hex.).....	6	116	*	.03
SKA-1555	Nut (¾-24x 7/16 Hex.).....	17	115	*	.02
SKA-1558	Key, Pulley.....	1	118	*	.20
SKA-1571	Cotter Pin (¼x ½).....	3	124	*	.02
SKA-1573	Nut, Socket Fitting (#10-32 Hex.).....	4	123	*	.02
SKA-1574	Socket Fitting (J. J. Tourek Type C #10-32).....	2	123	¾	.40
SKA-1579	Washer (¼ Plain Flat).....	3	113	*	.02

*Less than ¼ ounce.

†Varies.

GASOLINE ENGINE PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
SKA-1581	Screw, Governor Mounting ($\frac{1}{4}$ -20x $\frac{3}{4}$ Fillister Head).....	4	121	*	.02
SKA-1587A	Sheave, Starter, Assembly.....	1	120	1— $5\frac{3}{4}$	3.75
	A-996 Pin, Starter Sheave Spring Anchor.....	1	...	...	...
	SKA-1592 Bearing, Starter Sheave Hub.....	1	...	...	...
	SKA-1593 Pivot, Starter Pawl.....	2	...	...	...
	SKA-1594 Screw, Starter Pawl Pivot.....	2	...	...	...
	SKA-1678 Screw, Starter Sheave.....	6	...	...	...
SKA-1591A	Cable Assembly, Starter.....	1	120	$3\frac{3}{4}$	.80
	A-983 Anchor, Starter Cable.....	1	...	...	...
SKA-1592	Bearing, Starter Sheave Hub (Torrington #B88)...	1	120	$\frac{1}{2}$	.35
SKA-1593	Pivot, Starter Pawl.....	2	120	*	.15
SKA-1594	Screw, Starter Pawl Pivot (8-32x $\frac{3}{4}$ Flat Head)...	2	120	*	.02
SKA-1595	Washer, Thrust.....	3	120	*	.25
SKA-1597	Nut, Sheave Shaft ($\frac{7}{16}$ -20 Acorn).....	1	120	$\frac{3}{4}$	.15
SKA-1598	Screw, Starter Mounting ($\frac{1}{4}$ -20x1 $\frac{1}{2}$ Hex. Head)...	3	120	$\frac{1}{2}$	.03
SKA-1601A	Wire Assembly, Spark Plug.....	2	113	1 $\frac{1}{4}$	.50
SKA-1606A	Wire Assembly, Shorting Switch.....	1	114	$\frac{1}{2}$	.25
SKA-1610	Screw, Shorting Switch Wire (6-32x1 Round Head)	1	114	*	.02
SKA-1611	Bushing, Insulation.....	1	114	*	.03
SKA-1612	Washer, Insulation.....	2	114	*	.02
SKA-1613	Nut, Shorting Switch Terminal (6-32 Hex.).....	2	114	*	.02
SKA-1614	Screw, Fuel Tank to Crankcase.....	1	113	*	.02
SKA-1615	Screw, Magneto Support Sleeve ($\frac{5}{16}$ -24x $\frac{3}{4}$ Hex. Head).....	2	122	$\frac{1}{2}$	.10
SKA-1616	Lockwasher, Carburetor Mounting Stud Nut ($\frac{1}{4}$ Internal Shakeproof).....	2	117	*	.02
SKA-1618A	Spark Plug (Champion J-10 Commercial).....	2	116	2	.70
SKA-1620	Grommet (La Velle Rubber Co. #921).....	2	113	*	.05
SKA-1627	Spring, Choke Rod.....	1	124	*	.15
SKA-1628A	Shaft and Lever Assembly, Choke.....	1	124	$\frac{3}{4}$	.55
	SKA-1634 Screw, Choke Lever.....	1	...	...	...
SKA-1629	Shutter, Choke (Tillotson 05458).....	1	124	*	.15
SKA-1630	Screw, Choke Shutter (6-32x $\frac{1}{4}$ Round Head)....	1	124	*	.02
SKA-1631	Pin, Stop, Choke Shutter (Tillotson 03208).....	1	124	*	.05
SKA-1632	Spring, Choke Shaft (Tillotson 0737).....	1	124	*	.05
SKA-1634	Screw, Choke Lever Clamp (8-32x $\frac{7}{16}$ Fillister Hd.)	1	124	*	.02
SKA-1635	Gasket, Choke Body.....	1	124	*	.05
SKA-1636	Screw (8-32x $\frac{3}{8}$ Round Head).....	10	124	*	.02
SKA-1638	Elbow, Fuel Line Connection (Imperial Brass 69F)	1	123	$\frac{3}{4}$	.10
SKA-1639	Gasket, Bearing Housing (.005 or .015 Thick)....	†	117	*	.10
SKA-1640	Seal, Oil, Bearing Housing (Chicago Rawhide Type H Servene).....	1	117	$\frac{1}{2}$	.60
SKA-1641	Seal, Oil, Accessory Drive Gear.....	1	117	$\frac{1}{2}$	.40
SKA-1642	Bearing, Ball, Crankshaft (Fafnir 304KDD).....	3	117	5	1.50
SKA-1643	Key, Fan Hub.....	1	118	$\frac{1}{4}$	.15
SKA-1644	Plug, Drain, Crankcase.....	2	117	*	.05
SKA-1645	Fitting, Grease (Alemite #1612).....	1	117	$\frac{1}{2}$	.20
SKA-1649	Screw, Intake Valve Reed.....	4	118	*	.10
SKA-1650	Screw, Crankshaft ($\frac{3}{8}$ -24x1 Hex. Head).....	1	118	$\frac{3}{4}$	.05
SKA-1651	Nut, Fan Hub ($\frac{7}{16}$ -20 Elastic).....	1	118	$\frac{1}{2}$	.10
SKA-1652	Gasket, Governor Mounting (.005 and .015 Paper, .010 Steel).....	†	121	*	.05
SKA-1653	Screw, Connecting Rod ($\frac{1}{4}$ -28x $\frac{1}{2}$ Socket Head)...	4	119	*	.10

*Less than $\frac{1}{4}$ ounce.

†Varies.

GASOLINE ENGINE PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
SKA-1654	Roller, Connecting Rod Bearing (Torrington B1212 Needle Roller).....	56	119	*	.05
SKA-1655	Washer, $\frac{5}{16}$ Flat.....	17	115	*	.02
SKA-1657	Screw, Fan Mounting ($\frac{5}{16}$ -24x $\frac{7}{8}$ Oval Head).....	4	115	$\frac{1}{2}$	.05
SKA-1658	Screw, Fuel Tank ($\frac{1}{4}$ -20x $\frac{5}{8}$ Binder Head).....	3	113	*	.05
SKA-1659	Screw, Fan Housing ($\frac{3}{8}$ -16x $\frac{7}{8}$ Hex. Head).....	2	114	$\frac{3}{4}$	.05
SKA-1660	Lockwasher, Fan Housing ($\frac{3}{8}$ External Shakeproof)	2	114	*	.02
SKA-1661	Plug, Fuel Tank Welch ($1\frac{1}{4}$ Dia.).....	4	113	*	.05
SKA-1662	Screw, Magneto Cover Plate (8-32x $\frac{5}{16}$ Binder Hd.)	4	114	*	.02
SKA-1663	Fuel Line.....	1	113	$\frac{3}{4}$	.20
SKA-1663A	Fuel Line Assembly.....	1	113	$1\frac{1}{4}$	.40
	SKA-1663 Fuel Line.....	1	...	...	...
	SKA-1664 Sleeve, Fuel Line.....	2	...	...	...
	SKA-1665 Nut, Fuel Line, Gland.....	2	...	...	...
SKA-1664	Sleeve, Fuel Line (Imperial 60F).....	2	113	*	.05
SKA-1665	Nut, Fuel Line Gland.....	2	113	*	.05
SKA-1666A	Valve, Shut Off and Strainer Assembly.....	1	113	$1\frac{1}{4}$	.45
SKA-1671	Screw, Drive, Name Plate (#2x $\frac{3}{16}$).....	14	113	*	.02
SKA-1678	Screw, Starter Sheave (8-32x $\frac{1}{2}$ Flat Head).....	6	120	*	.02
SKA-1679	Handle, Starter Rope (Emergency).....	...	...	$\frac{1}{2}$	.10
SKA-1680	Rope, Starter (Emergency).....	...	...	$\frac{3}{4}$	.10
SKA-1681	Can, Gasoline, with Spout, 2 Gallon (Geuder, Paeschke, & Frey #22).....	1	132	1 — $7\frac{1}{2}$	1.50
SKA-1683	Can, Oil, 1 Gallon (Geuder, Paeschke & Frey #10).	1	132	1 — $\frac{1}{2}$	.80
SKA-1685A	Cap, Fuel Tank.....	1	113	$1\frac{1}{4}$	.65
	A-925 Gasket, Fuel Tank.....	1	113	...	...
SKA-1685A-1	Cap, Air Passage Clean-out.....	1	113	1	.50
	A-925 Gasket, Fuel Tank.....	1	...	...	...
SKA-1686	Gun, Grease (Alemite 6556).....	1	132	1 — $8\frac{1}{4}$	3.00
SKA-1688	Gauge, Spark Gap (Cornwell Tool Co.).....	1	132	1	.60
SKA-1689	Wrench, Spark Plug (Apco 14MM).....	1	132	$6\frac{1}{4}$	.45
SKA-1691	Wrench $\frac{7}{16}$ (Barcalo 1212).....	1	132	$1\frac{3}{4}$	.60
SKA-1692	Wrench $\frac{1}{2}$ (Barcalo 1213).....	1	132	$2\frac{3}{4}$	.70
SKA-1697	Bearing, Piston Pin (Torrington B-912X).....	2	119	$\frac{1}{2}$	.50
SKB-1724	Cover, Cylinder.....	1	116	5	.25
SKA-1736	Plug, Welch ($\frac{3}{8}$ Dia.).....	2	117	*	.05
SKA-1741	Dowel, Center Main Bearing, Locating.....	1	117	*	.20
SKA-1746A	Rod Assembly, Choke.....	1	124	$1\frac{1}{4}$	.40
SKA-1754	Wire, Magneto Bolts.....	2	...	*	.10
SKB-1757	Cover, Spark Plugs.....	1	113	3	.25
SKA-1758	Screw, Air Cleaner Screen (6-32x $\frac{1}{4}$ Binder Head).	5	113	*	.02
SKA-1759	Washer, Shorting Switch Terminal (#6 Flat Steel).	1	114	*	.02
SKA-1772	Bushing, Starter Handle.....	1	120	$\frac{3}{4}$	.25
SKB-1784DA	Pulley Starter and Drive.....	1	118	1—13	7.50
SKA-1785	Lockwasher, Socket Fitting (#10 Split).....	2	123	*	.02
SKA-1788	Puller, Fan Hub.....	1	132	$13\frac{1}{4}$	1.50
SKA-1794	Gasket, Cylinder.....	2	116	*	.05
SKA-1798	Screw, Clamp, Center Main Bearing ($\frac{1}{4}$ -28x $\frac{3}{4}$ Fillister Head).....	2	74	*	.02
SKA-1808	Washer, Pre-Loading—Rubber.....	2	117	*	.15
SKA-1809	Washer, Pre-Loading—Steel.....	1	117	*	.05
SKA-1810	Stud, Carburetor Mounting.....	2	117	*	.15
SKA-1813	Plate, Spark Plug Cover Warning.....	1	113	*	.25
SKC-1817	Foot, Mounting.....	1	117	1 — $\frac{1}{2}$	4.50
SKA-1856	Bearing, Fan Hub (Fafnir 510K).....	1	117	$2\frac{3}{4}$	1.30
SKA-1882	Lockwasher ($\frac{7}{16}$ Internal Shakeproof).....	1	120	*	.02
SKA-1896	Bolt, Mounting Foot ($\frac{5}{16}$ -24x $1\frac{1}{2}$ Flat Head).....	3	117	$\frac{1}{2}$	.03
SKA-1903	Stud, Muffler.....	4	116	$1\frac{1}{4}$	.45

*Less than $\frac{1}{4}$ ounce.

GASOLINE ENGINE PARTS—Cont.

Part No.	Description	Quan.	Page	Weight Lbs. Oz.	Price Each
SKA-1911	Key, Starter Housing.....	1	120	*	.20
SKA-1920	Gasket, Exhaust Manifold.....	6	116	*	.05
SKA-1924	Plate, Name and Serial.....	1	114	*	.25
SKC-1931	Muffler.....	1	116	2— 3½	5.50
SKA-1947	Lockwasher (¼ Split).....	6	121	*	.05
SKA-1950A	Shaft, Starter Sheave, Assembly.....	1	120	2	1.25
SKA-1962	Rod, Governor to Throttle.....	1	123	¾	.45
SKA-1976A	Screen, Air Intake.....	1	113	½	.90
SKA-1979	Plate, Fuel Instruction.....	1	113	½	.25
SKA-1980	Plate, Starter Instruction.....	1	114	½	.25
SKA-1989	Seal, Oil, Fan Hub.....	1	117	1	.60
SKA-2023	Washer, Magneto Support Sleeve Screw.....	2	122	1	.10
SKA-3000A	Carburetor Assembly Complete (Tillotson AJ-13A).....	1	123	15¼	4.00
SKA-3000	Body, Carburetor (Tillotson O-7353).....	1	123	11¾	2.40
SKA-3001	Cover, Carburetor Bowl (Tillotson O-7216).....	1	123	1	.20
SKA-3002	Gasket, Bowl Cover (Tillotson O-7198).....	1	123	*	.05
SKA-3003	Screw, Bowl Cover (Tillotson O-54).....	2	123	*	.05
SKA-3004	Lockwasher, Bowl Cover (Tillotson O-992).....	2	123	*	.02
SKA-3005	Clip, Carburetor Float (Tillotson O-5425).....	2	123	*	.01
SKA-3006	Float, Carburetor (Tillotson O-4636).....	1	123	*	.20
SKA-3007	Tube, Idle (Tillotson O-6905).....	1	123	*	.50
SKA-3008	Seat and Valve Inlet Assembly (Tillotson O-6941).....	1	123	*	.75
SKA-3009	Gasket, Inlet Valve Seat (Tillotson O-212).....	1	123	*	.02
SKA-3010	Plug, Welch (Tillotson O-2531).....	1	123	*	.05
SKA-3011	Lever Assembly (Tillotson O-7385).....	1	123	¾	.75
SKA-3012	Shutter, Throttle (Tillotson O-7369).....	1	123	*	.10
SKA-3013	Screw, Throttle Shutter (Tillotson O-4849).....	1	123	*	.05
SKA-3014	Plug, Carburetor Bowl Drain (Tillotson O-164).....	1	123	*	.05
SKA-3015	Screw, Inlet Channel (Tillotson O-2395).....	1	123	*	.05
SKA-3016	Nut, Low Speed Valve (Tillotson O-6243).....	1	123	*	.02
SKA-3017	Lockwasher, Low Speed Valve (Tillotson O-759).....	1	123	*	.02
SKA-3018	Gasket, Gland (Tillotson O-676).....	1	123	*	.02
SKA-3019	Screw, Idle Adjustment (Tillotson O-6910).....	1	123	*	.20
SKA-3020	Gland, Adjustment Screw (Tillotson O-703).....	1	123	*	.15
SKA-3021	Packing, Adjustment Screw (Tillotson O-705).....	1	123	*	.05
SKA-3022	Nut, Gland (Tillotson O-702).....	1	123	*	.25
SKA-3023	Screw, Main Adjustment (Tillotson O-5839).....	1	123	*	.40
SKA-3024	Gasket, Bowl Drain Screw (Tillotson O-648).....	1	123	*	.02
SKA-3025	Gasket, Idle Tube (Tillotson O-6569).....	1	123	*	.03
SKA-4000A	Governor Assembly Complete.....	1	121	2— 7¾	45.00
SKA-4000DA-1	Housing Assembly, Governor.....	1	121	1— ¾	27.00
SKA-4009	Cup, Oil (Pierce X-495).....	1	121	*	.50
SKA-4014	Plug, Oil Level (Pierce X-1222).....	1	121	*	.25
SKA-4015A	Flange, Assembly Governor.....	1	121	1— 5¼	32.50
SKA-4023	Lever, Spring Tension Adjusting (Pierce G-7781).....	1	121	¾	.75
SKA-4024	Cotter Pin (¾x¾).....	1	121	*	.05
SKA-4025	Nut, Lock, Adjusting Screw (12-24 Hex.).....	1	121	*	.05
SKA-4026	Screw, Spring Tension Adjusting (Pierce X-911).....	1	121	*	.20
SKA-4027	Spring, Governor (Pierce SN-1264).....	1	121	1	1.25
SKA-4028	Screw, Leverage Adjusting (Pierce G-5145).....	1	121	½	1.00
SKA-4029	Nut, Lock, Leverage Adjusting (¼-28 Hex.).....	2	121	*	.05
SKA-4030	Gasket, Governor Housing (Pierce X-1218).....	1	121	*	.15
SKA-4031	Lockwasher, Yoke Screw (#10 Split).....	2	121	*	.05
SKA-4032	Screw, Governor Housing (10-24x¾ Fillister Hd.).....	4	121	*	.10
SKA-5000A	Magneto Assembly Complete.....	1	122	4— 8½	32.50
SKA-5000A-1	Frame Assembly, Magneto.....	1	122	4— 0	27.50
SKA-5007	Plate, Breaker Support (Fairbanks Morse H-4631).....	1	89	1¼	1.50

*Less than ¼ ounce.

GASOLINE ENGINE PARTS—Cont.

Part No.	Description	Quan.	Page	Weight. Lbs. Oz.	Price Each
SKA-5017	Screw, Breaker Support (8-32 x $\frac{3}{8}$ Flat Head)...	4	89	*	.02
SKA-5020	Cap, End (Fairbanks Morse LX-2430).....	1	122	4 $\frac{1}{4}$	2.50
SKA-5021	Gasket, End Cap (Fairbanks Morse H-2498)....	1	122	*	.10
SKA-5022	Screw, End Cap (10-24 x $\frac{1}{8}$ Fillister Head).....	4	122	*	.02
SKA-5023	Washer, End Cap Screw (#10 Flat).....	4	122	*	.03
SKA-5024	Lockwasher, End Cap Screw (#10 Split).....	4	122	*	.02
SKA-5025	Brush, Coil Lead (Fairbanks Morse E-2460B)...	1	122	*	.30
SKA-5026	Rotor, Distributor (Fairbanks Morse Q-2765)....	1	122	1 $\frac{1}{4}$	1.25
SKA-5027	Screw, Condenser Mounting (8-32 x $\frac{3}{8}$ Round Hd.)	3	122	*	.03
SKA-5028	Lockwasher, Condenser Mounting (#8 Split)....	2	122	*	.05
SKA-5029	Washer, Contact Bracket (#8 Flat).....	1	122	*	.02
SKA-5030	Screw, Breaker Point Adjusting (Fairbanks Morse C-2455).....	1	122	*	.15
SKA-5032A	Points, Breaker, Set (Fairbanks Morse U-2437) ..	1	122	$\frac{1}{2}$	2.00
SKA-5037A	Wire, Primary Ground (Fairbanks Morse D-2499A).....	1	122	*	.20
SKA-5039	Clip, Breaker Arm (Fairbanks Morse A-1498G)...	1	122	*	.10
SKA-5040	Washer, Breaker Arm Clip (Fairbanks Morse A-2458A).....	1	122	*	.05
SKA-5043	Screw, Friction Ring ($\frac{1}{4}$ -20 x $\frac{5}{8}$ Hex. Head).....	2	122	*	.03
SKA-5044	Clamp, Magneto Friction Ring.....	1	122	3	.15
SKA-5045	Rod, Distributor Lead (Fairbanks Morse B-983A) ..	1	122	*	.15
SKA-5046	Pin, Rotor (Fairbanks Morse A-2669).....	1	122	*	.15
SKA-5047	Condenser (Fairbanks Morse S-2433).....	1	122	1	1.25
SKA-5048	Screw, Felt Wick (6-32 x $\frac{3}{8}$ Fillister Head).....	1	122	*	.02
SKA-5049	Lockwasher, Felt Wick Screw (#6 Split).....	1	122	*	.02
SKA-5050	Spacer, Felt Wick Screw (#6 Flat Washer).....	1	122	*	.10
SKA-5051	Wick, Felt (Fairbanks Morse E-2788).....	1	122	*	.10
SKA-5052	Washer, Felt Wick Retaining (Fairbanks Morse C-6503).....	1	122	*	.05
SKA-5053	Coil (Fairbanks Morse G-2477).....	1	122	13	6.50
SKA-5054	Screw, Set, Coil Bridge (Fairbanks Morse 25SS12A).....	2	122	*	.02
SKA-5055A	Switch Assembly, Primary Ground (Fairbanks Morse A-2514D).....	1	122	*	.60
SKA-6101A	Gaskets, Set.....	1	...	$\frac{1}{2}$	1.40

*Less than $\frac{1}{4}$ ounce.

†Varies.

Prices Subject to change without notice.

TRADE REFERENCES

Name of Part	Model	Manufacturer
Spray Guns, Tanks Parts, etc.		Binks Manufacturing Co. Chicago, Ill.
Compressor	216	Quincy Compressor Co. Quincy, Illinois
Gasoline Engine	Mercury KB6F	Kiekhaefer Corporation Cedarburg, Wisconsin.
Magneto		Fairbanks Morse Co. Beloit, Wisconsin
Carburetor	AJ-13A	Tillotson Manufacturing Co. Toledo, Ohio
Governor		Pierce Governor Co. Anderson, Indiana

